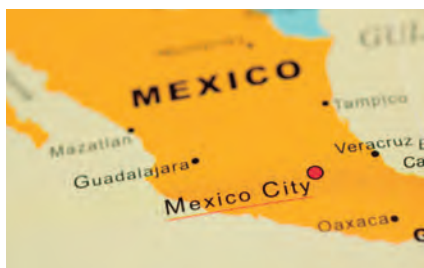


2015: A YEAR OF CHALLENGES AND OPPORTUNITIES

V Mafex
International
Railway
Convention
Seville 2015,
June 15th – 17th



IN DEPTH: TRANSPORT IN INDIA
27 cities have opted for the metro as
the best mean of transport



DESTINATION: MEXICO
The country faces major challenges
on rail



INTERVIEW WITH ANA PASTOR
The Spanish Minister of Public Works
comments on the current railway situation



rubberized soft mobility



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The appointment will be in Seville (Spain) during June 15th-17th and, together with the Spanish industry, leading operators and rail infrastructure administrations will meet in the framework of the V International Railway Convention organized by Mafex.



TESTIMONIES

International prestigious personalities from the sector give their point of view about the conventions organized by Mafex.

AFRICAN RAILWAYS VISIT SPAIN

Senior railway managers in Angola, Zambia, Zimbabwe, Namibia, Mozambique and South Africa are interested in the Spanish expertise on rail.

SPANISH COMPANIES TRAVEL TO TURKEY, BRAZIL AND CHILE

Three priority markets for the Spanish railway industry where its presence is key to rail development in these countries.

SUCCESS OF THE SPANISH INDUSTRY AT INNOTRANS 2014

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READY FOR YOUR CHALLENGES

A year full of challenges for the Spanish railway industry begins

Dear friends,

As promised, we're here with the second issue of the Corporate Magazine of our Association.

Since launching the first issue last September, MAFEX has embarked itself on a substantial number of actions and events.

On September 16th, we celebrated our tenth anniversary. Time is running at high speed. In 2004 we attended the fair INNOTRANS along with 11 companies, forming the Spanish flag. This year we participated, as we announced in the first issue of this magazine, with 53 companies. Indeed the fair was, once again, a success for Spanish participation.

In recent months, the renewal of the Steering Committee of MAFEX has taken place. Mr. Victor Ruiz Piñeiro, who already occupied the presidency since 2006, has been re-elected to be the President of the Association for the next four years.

The association has also organized various activities, focusing efforts in the region of Southern Africa, Southeast Asia and countries such as Turkey, Egypt, Kazakhstan, Israel, Panama, Peru, Chile and Brazil.

2015 presents an ambitious plan of activities in which we must highlight the celebration of the V INTERNATIONAL RAILWAY CONVENTION,

organized by MAFEX and where organizations and railway companies from over 25 countries will hold meetings with representatives from the Spanish railway industry. In this occasion, Seville is the city chosen to host the event that we celebrate every 2 years.

2015 will feature the presence of MAFEX through various actions in countries like Oman (GCC Rail and Metro Conference), Mexico (Exporail), UAE (Middle East Rail), Malaysia (Rail Solutions), Italy (UITP World Congress & Exhibition), Japan (UIC High Speed Congress & Exhibition), UK (Metro Rail), United States (Railway Interchange), Peru, Ecuador, Saudi Arabia and South Africa. Also, the work done by several existing committees in the Association will continue, as well as our participation in national and international forums.

You can find this information on this second issue, which also addresses topics such as urban transport in India and current rail projects in Mexico, as well as, of course, news about our associates and their successes abroad, their innovations and new products.

At the same time, we would like to wish you our best wishes for the year 2015, which is about to begin. A year full of challenges!

MANAGEMENT: MAFEX.

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V International Railway Convention



Opening day of the Fourth International Railway Convention in June 2014 in Bilbao.

THE APPOINTMENT, WHICH WILL TAKE PLACE IN SEVILLE (SPAIN) DURING JUNE 15TH-17TH 2015, WILL BRING TOGETHER THE SPANISH INDUSTRY'S OPERATORS AND ADMINISTRATORS FROM MAJOR WORLD RAILWAY INFRASTRUCTURE IN THE FRAMEWORK OF THE V INTERNATIONAL RAILWAY CONVENTION ORGANIZED BY MAFEX WITH THE SUPPORT OF ICEX SPAIN TRADE AND INVESTMENT.

Representatives of railway organizations and companies from over 25 countries around the world will gather in Spain to learn more about the Spanish offer

Mafex is organizing the fifth edition of an event that began in 2007 and is held every two years in different Spanish cities during the years in which Innotrans does not take place. On this occasion, the V International Railway Convention will be held in Seville during June 15th-17th, 2015, and will bring together fifty operating companies, infrastructure managers, metros from several cities, governments, manufacturers and suppliers of rail services in different parts of the world, as well as the main Spanish railway companies.

The aim of this event is basically bringing together leading operators and rail infrastructure managers from different countries with the Spanish industry. Thus, foreign companies will present their corresponding present and future investment plans in their respective countries and, also, get to know in first-hand the different technological solutions developed in Spain that more likely meet their current needs.

Railway companies from numerous countries come to Spain

Mafex has gathered over the last four editions of the International Railway Convention more than 175 companies and rail organizations from 62 countries from the five continents.

Thanks to their participation in previous editions, these companies have been able to see in first-hand the great railway development that has taken place in Spain during the last decades. These innovations have been realized in two levels: high speed -where Spain ranks 1st in Europe and 3rd place worldwide- and the creation of a network of over 1,000 kilometres of urban rail systems, like the one owned by Spanish cities. These developments have occurred due to the significant investments that the Spanish government and the regional organizations have undertaken in railway infrastructure in our country, which, in turn, has led to developing a highly competitive and innovative local industry that

Seville 2015



Over 500 meetings between Spanish companies and international rail customers were held in the III International Railway Convention (Zaragoza).

currently holds a leader position among the other countries of the world.

This way, foreign guests had the opportunity to establish contact with the Spanish companies which have conducted such developments. Companies that are leaders in the various stages of the value chain of the rail industry: Engineering and consulting, construction, electricity, manufacturers of fixed equipment, component manufacturers and board equipment, rolling stock manufacturers, interior design companies, maintenance, signalling, traffic control, telecommunications and ticketing, among others.

V Railway Convention in Seville

During the days in which the Con-

vention will be held, various activities will be conducted with the aim of promoting networking among foreign delegates and Spanish railway companies.

The program of this V Convention will mainly focus on four types of activities. In the first place, there will be individual sessions where Spanish companies will present their business to foreign delegates in a private meeting and where an individual exchange of contacts will be promoted among each other, through the organization of B2B meetings managed by the association itself and according to the mutual interests of both foreign delegates and attendees of the Spanish companies. In addition, various seminars and confer-

ences will be held, where foreign delegates will have the opportunity to present the development plans that are being carried out in their countries and organizations, as well as the current needs to establish a collaboration plan with Spanish companies.

Different technical visits will take place at both levels, generic and in terms of the particular interests of each guest, as well as visits to Spanish companies, in order to make the most of the presence of the attendees in our country. Also, the Convention will continue its philosophy, which has already been consolidated through the previous four editions, to provide a platform of knowledge between professional **Continues ▶**



Guests from 46 railway companies from 24 countries visit the Abando station (Bilbao).

If you want to receive more information, please contact us:
Email: mafex@mafex.es
Telephone: +34 94 470 65 04

and organizations in an informal atmosphere via the high number of cafes, lunches and dinners which will be organized in order to promote important business networking. In other words, the event will once again raise awareness of the nation-

al and international Spanish railway experience to major international players in the sector, being able to do this in three days of meetings, seminars, technical visits and networking with Spanish companies in the sector. 🌐



Visit to Bilbao's tram.



Seminar held during the Fourth Convention on "The Future of railways in the Arab countries of the Gulf Cooperation Council."

COMPANIES THAT HAVE PARTICIPATED IN MAFEX CONVENTIONS

In the 4 editions of the International Railway Convention, Mafex has gathered over 120 companies and rail organizations from over 50 countries on five continents. This is a sample of the main guests who have visited Spain with Mafex during 2007-2013.

Saudi Arabia	SG the Cooperation Council for the Arab States of the Gulf - King Fahd Causeway Authority Ministry of Transport MRS - Mohawarean Railway Services - SRO - Saudi Railways Organization -
Algeria	Anesrif Enterprise Metro d'Alger Infrarail SPA - Setirail SPA SNC - Lavalin International
Argentina	Nuevo Central Argentino, S.A. Secretaría General - Provincia de Rio Negro Subsecretaría de Transportes - Dirección de transporte ferroviario Tren Patagonico
Australia	Southport Engineering Pty Ltd
Bosnia and Herzegovina	BHŽJK Federal Ministry of Transport
Brazil	ABIFER - Asociación Brasileña de la Industria Ferroviaria - ALL ANP TRILHOS ANTF CPTM - Companhia Paulista de Trens Metropolitanos - Metro DF - Companhia do Metropolitano do Distrito Federal - MRS Logística, S.A. Supervia Transnordestina Logística
Bulgary	National Railway Infrastructure Company
Chile	EFE - Ferrocarriles del Estado - Ferrocarril de Arica a la Paz, S.A. Icil Icafal, S.A.
China	China CNR Corporation Limited China Railway Related Material Group Co. Ltd CRCC - China Railway Construction Corporation Limited - CSR Corporation Limited Shanghai Metro Operation Co Ltd Zhuzhou CSR Times Electric Co. Ltd
Colombia	FENOCO - Ferrocarriles del Norte de Colombia - Metro Medellín
Korea	KORAIL - Korea Railroad Corporation Seoul Metro - Seoul Metropolitan Subway Authority -
Costa Rica	Incofer
Croatia	Duro Dakovic Special Vehicles Željeznicko Projektno Društvo, d.d.
Denmark	DSB - Danish State Railways -
Ecuador	FEEP - Ferrocarriles del Ecuador Empresa Pública - Quito
USA	Alstom Transport Train Life Services California High-Speed Rail Authority Midwest High Speed Rail Association Transportation Technology Center
Egypt	The Egyptian Company for Metro
Arab Emirates	National Transport Authority
Slovenia	DRI - Ministry of Transport -
Ethiopia	ERC - Ethiopian Railways Corporation -
Philippines	PNR - Philippine National Railways
France	Alstom Transporte, S.A. RFF - Réseau Ferré de France -

Greece	Erga Ose S.A.
Hungary	BKV Ltd, Budapest Transport Closely Held Corporation MAV Co. MÁV START
India	Indian Railways Jaipur Metro Rail Corporation Rites Tata Projects Limited
Indonesia	Indonesian Railways Ministry of Transport PT. Inka PT. Wijaya Karya
Iran	RAI - Iranian Islamic Republic Railways -
Italy	Italferr
Kazakhstan	Metropolitan Almaty
Kuwait	Ministry of Communication
Latvia	LDZ - Latvijas Dzelzceļš Latvian Railway-
Macedonia	Macedonian Railways Transport -
Malaysia	KTMB
Mexico	Sistema de Transporte Colectivo - Metro SITEUR - Sistema de Tren Eléctrico Urbano - STC Metrorrey
Mozambique	CFM
Nigeria	NRC - Nigerian Railway Corporation -
Oman	Supreme Committe for Town Planning
The Netherlands	Veolia Transdev
Peru	Ministerio de Transportes y Comunicaciones del Perú
Poland	PKP INTERCITY PKP PLK UTK
Portugal	Ferrovias, S.A. Safevia
Qatar	Ministry of Business & Trade - Department of General Transport Qatar Rail Company QBIT
República Checa	Skoda Transportation
Russia	JSC - "Federal Passenger Company" -
South Africa	Hailway Trading PRASA SDB Holding TRANSNET Freight Rail
Thailand	Mass Rapid Transit Authority of Thailand SRT - State Railway of Thailand -
Taiwan	MOTC - Bureau of High Speed Rail -
Turkey	Istanbul Ulasim Metro de Ankara Tulomsas Tuvasasº
Ukraine	Ministry of Infrastructure of Ukraine UKRzaliznytsya
Venezuela	C.A. Metro Caracas IFE - Instituto de Ferrocarriles del Estado
Vietnam	Vietnam Railways

What attendees say

MAFEX HAS ORGANIZED FOUR CONVENTIONS WITH THE ASSISTANCE OF PRESTIGIOUS INTERNATIONAL EXPERTS FROM THE RAILWAY SECTOR. SOME OF THEM HAVE WANTED TO SHARE WITH US THEIR PLEASANT EXPERIENCE IN SPAIN.



Marcella Cunha
Manager for Governmental and International Relationships
ANTF. Brazil

"The Brazilian railway operators expect to continue participating in the actions of Mafex"

For Latin American countries, in particular, it is very important to know the rail projects carried out in Spain, as well as knowing the latest technology in railway factories in the country. Undoubtedly, Spain is now one of the most important global benchmarks in terms of railway development, with which Brazil has always had valuable experience from intense exchanges of expertise and equipment acquisition. On behalf of the Brazilian railway operators, we expect to continue participating in these actions that aid to increase international approach to the sector via Mafex.

Juliana Morgado
Technical Manager and Coordinator in supplying committee
ANTF. Brazil

"The conventions were valuable opportunities for our associates"

It's always a great pleasure for the Brazilian delegation (composed by companies associated with ANTF) to obtain valuable information from technical meetings and visits organized under the framework of Mafex. All conventions in which ANTF has participated resulted in valuable opportunities for our partners to expand their network of contacts and relationships with important personalities of the rail freight sector in Spain, besides being able to meet new suppliers and exchange experiences among the different countries involved at the meeting. I find these 1:1 meetings with companies very interesting. They bring the buyer closer to the supplier, facilitating future business between the two countries.



Ernesto Picón Rubio
Traffic Manager
STC Monterrey
Mexico

"The contribution of these conventions result in getting to know more details of the Spanish market"

The contribution of these conventions are knowing more details of the products, parts and appliances for Railway Infrastructure found in the Spanish market, thus expanding our range of options and possibilities. In addition to the technological innovations that are being implemented in Rail Transport Systems, both freight and passengers, and that are within our reach, I would also highlight the coexistence and transmission of our own experiences with colleagues from other countries and, of course, the registration of contacts from other companies into our service. Regarding these Conventions, I would highlight that they are the most interesting place to witness the innovations already implemented in the systems and get to know the technical capacity of the manufacturing and service industry. Lastly, I highly recommend this Convention, for the simple reason that they have the opportunity to be in a series of events that will enrich and extend the broad knowledge of the great development undertaken in Railway Transport.



Miguel Alejandro Sanhuenza Olivares
Director of technological projects
Empresa de los Ferrocarriles de los
Estados - EFE - Chile

"It's a very rewarding activity for the knowledge of the rail industry"

The conferences provide a forum for industry knowledge and technology that could not be demonstrated through other means. It is also the place to share experiences with other railway companies and discuss common problems and solutions. Thanks to these conventions, the overall look and drive in our fields of action and projects can be amplified. The most interesting part is the opportunity to visit the plants of the manufacturers and their processes, which show a great expertise in production and product quality. I would also like to mention the possibility of making new contacts and see the reality of other railways.

Of course, it is a very rewarding activity for the knowledge of the railway industry, because Spain is at the forefront in the railway sector destined to passengers, therefore they know the good and bad of being the pioneers, for which these activities help participants be in the right path to reach success in their projects.



Mr. A Rahman Ali Al Malik
Project Director
Qatar Rail Company
Saudi Arabia

"Mafex conventions are an excellent place to expand the network of contacts and exchange different experiences with participants from all over the world"

I think the conventions organized by Mafex are a great opportunity to meet with the different companies that contribute to the development of the rail industry. They are also an excellent place to expand the network of contacts and exchange different experiences with participants from all around the world. For me, the most interesting part of the convention I attended was the opportunity to meet people from different areas of expertise, as well as from different countries. I strongly recommend my colleagues to participate in these events, which I believe to be well organized and with clearly defined objectives.



Fernando Peña
Former General Director
Ferrocarriles Arica La Laz.
Chile

"They open new possibilities for innovative solutions that can ultimately be transformed into business opportunities"

It is a forum to exchange experiences with other attendees and Spanish companies involved. Mafex conventions open up possibilities for innovative solutions that eventually can become business opportunities that extend and enhance the know-how of the rail industry. In first place, I would highlight the opportunity to know new solutions to similar problems given the extensive and proven experience in the Spanish railway industry. In second place, the possibility it gives to share views with players from the global rail industry and exchange experiences.

I recommend attending these conventions because it is an opportunity of great quality and professional excellence, which undoubtedly contributes to solve industry challenges with innovative proposals and allows establishing important links for future collaborations.

African Railways visit Spain

SENIOR MANAGEMENT CHARGES FROM THE RAILWAYS OF ANGOLA, NAMIBIA, ZAMBIA, ZIMBABWE, MOZAMBIQUE AND SOUTH AFRICA HAVE SHOWN AN INTEREST IN THE KNOW-HOW OF THE SPANISH RAILWAY INDUSTRY



Technical Visit from the Delegation of the African Railways to the Traffic Control Centre in the station of Chamartin (Madrid).

The Spanish Railway Association, Mafex, organized with the support of ICEX Spain Exports and Investment, the conference "Business Opportunities in the railway sector in Sub-Saharan Africa", which was held in Madrid during September 15th – 19th 2014. An activity aimed to promote the expansion of the Spanish industry in the continent, with special attention to six emerging markets.

The sessions were attended by senior managers and representatives of Angolan railways, Instituto Nacional dos Caminhos de Ferro; Namibia, TransNamib Holdings Ltd; Zambia, Zambia Railways Limited; Zimbabwe, National Railways of Zimbabwe; Mozambique, Portos e Caminhos de Ferro de Moçambique, and PRASA, the passenger operator of South Africa. All of them explained, in a series of papers, the importance the railway has regarding the development of their countries, as well as

the need to have the know-how and high technology, and other specialized solutions offered by the Spanish industry.

Business opportunities for the Spanish railway industry

Mr. Manuel João Lourenço, General Director of the Instituto de los Caminos de Ferro de Angola (INCFA), focused his conference on rail projects planned until 2017 in Angola, where he highlighted, among others, the light rail line in Luanda, as well as other major projects that are currently under study. According to Lourenço, MAFEX's invitation to this conference meant "opening business opportunities for the Spanish industry in Angola".

Mr. Hippy Tjivikua, Executive of the Strategy and Management Area in Transnamib Holdings Ltd of Namibia, explained that the railway network in the country currently has 2,668 km and that its greatest dif-

ficulty nowadays is the lack of rail links with adjacent countries (Botswana, Zambia and Zimbabwe). In this sense, his interest is currently focused on being able to have a network with which the country has the possibility to communicate with them and have an easier and faster transport between them.

Meanwhile, Professor Muyenga Atanga, CEO of Zambia Railway Limited (ZRL), declared that the US economy will grow at around 8% annually during the next five years. An improvement that needs a strong boost in transport connections in order to increase the number of exports in external markets, especially copper. In addition, the government plans to launch a large number of works such as Chingola's connection to Jimbe, on the border with Angola, the branch Kafue (Zambia)-Zawi (Zimbabwe), the line TAZARA Nseluka with the port Mpulungu, the expansion of the railway line

Mchinji/Chipata so that it connects to the port of Nacala (Mozambique) and the link with Namibia.

Mr. Lewis Mukwada, General Director of National Railways of Zimbabwe (NRZ), took advantage of his presence at this conference to talk about the program regarding the rehabilitation of the tracks, rolling stock and signalling and telecommunications systems in the national network. He emphasized on the routes Lion's Den-Kafue, Shamva-Moatize, the commuter line Harare-Machipanda and Harare-Beira.

Moreover, Mr. Sancho Quipiço Junior, Member of the Board, and Mr. Alves Cumbe, Director of Communications at Portos e Caminhos de Ferro de Moçambique (CFM), focused their conference on the need that their country has today on investing with the objective of improving the rail system, especially freight, given its geographical location.

Finally, the President of PRASA Passenger Rail Agency of South Africa, Mr. Popo Molefe, and its CEO, Mr. Mosenngwa Mofi, explained how South Africa is currently in full development of the railway infrastructure following the adoption of the "Plan 2012 -2030 Investment in Railway Sector", which includes, among other things, the acquisition of rolling stock valued in over 40,000 million euros, and the expansion of rail and port infrastructure to improve trade between South Africa and the international markets.

Ultimately, the aim of the conference was to analyse the different options for business collaboration facing the new transportation plans that are programmed in the area. Also, the event served to show the attendees the high training of the Spanish industry and meet the particular needs of each project, including the creation and improvement of existing rail corridors to enable freight traffic to major ports in the region and the implementation of



Conference on Business Opportunities in the railway sector in sub-Saharan African countries (Madrid).

systems for mass passenger transport. Both of them were described as a priority.

The agenda of the delegation was completed with more than 67 B2B meetings between African experts and 25 Spanish companies participating in the event; and 15 technical visits to some of the most representative companies in the sector in different Spanish regions such as Valencia, Madrid and the Basque Country.

Study Mission to South Africa, Mozambique and Ethiopia

In order to reinforce the efforts that the Spanish Railway Association and the industry itself is carrying out on the African continent, the Director of Mafex, Pedro Fortea, travelled to the three countries during October 20th – 24th 2014. During the visit, Mr. Fortea had the opportunity to meet with PRASA and the Department of Trade and Industry in Johannesburg; Railways of Mozambique, CFM, in Maputo; and Ethiopian railways, ERC, in Addis Ababa, all with the support of the Economic and Commercial Office of Spain in Johannesburg and Cairo, as well as with the collaboration of the Embassy of Spain in Maputo.

Improving transport infrastructure is one of the most urgent challenges for Mozambique. In this country, reaching almost 3,000 kilometres, a

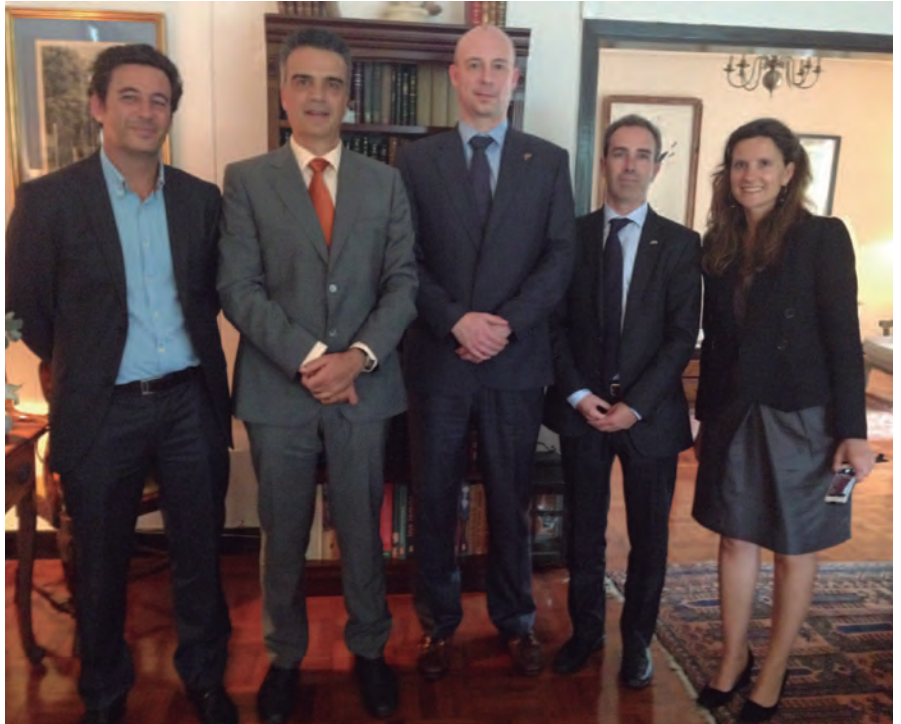
north-south connection is necessary. It is an area of great potential, given its geographical location as a natural transit corridor and a point of access to the sea from various countries which are landlocked. This is why the restructuring of its rail system is so important, after 16 years of internal conflict. Among the projects for freight rail systems, we must include Nacala and Beira. Nacala is a key corridor for neighbouring landlocked countries such as Malawi and Zambia, with the support of the African Development Bank (ADB) and the Japan International Cooperation Agency (JICA, for its acronym in English). On the other hand, the "Beira Railway Project" aims to rehabilitate the system in central Mozambique. Also, significant investments are planned for the expansion of the port of Maputo in order to increase their ability to transport goods between 40 and 50 million tons by 2020 and the migration of additional cargo from road to rail. In parallel, CFM plans to invest USD 2,000 million in infrastructure to increase freight arriving at the port of Maputo by rail. According to the President of CFM, most of this investment will be destined to the purchase of locomotives and 600 million SD to the rehabilitation and upgrading of the infrastructure. For the railway managers in Mozambique, the rail connection to South Africa is key. 🌐

Santiago Miralles Huete, Spanish Ambassador in Maputo (Mozambique)

THE SPANISH EMBASSY IN MAPUTO EXPRESSES ITS GRATITUDE TO MAFEX FOR SUPPORTING ON MOZAMBIQUE AND FOR TAKING THE INITIATIVE TO EXPLORE THE MARKET AND ENCOURAGE THEIR COMPANIES TO KNOW ABOUT IT

With an average of 8% annually over the past decade, Mozambique is one of the fastest growing countries in Africa. Huge deposits of natural gas in the Rovuma Bay and coal reserves in the province of Tete have been discovered, which explains the remarkable economic and social transformation that this country is experiencing. Appropriate macroeconomic policies and the political stability Mozambique has nowadays is attracting foreign investment.

There are many opportunities for Spanish companies to participate in the development of transport infrastructure. The privileged geographical position of Mozambique has made this "pearl of the Indian Sea" the natural outlet to the sea for neighbouring countries such as Malawi, Zimbabwe, Botswana and Zambia and even north-eastern South Africa. The maintenance and updating of the rail network that began in colonial times is essential to stimulate the dynamics of regional economic integration. Mozambique has over 3,000 km. of railways, but these were destroyed after the war of independence and the civil war (which ended in 1992). Today its reconstruction is essential for structuring the country economically. The national railway company, Caminhos de Ferro de Moçambique (CFM), estimated that an investment of over twenty billion dollars is needed.



Mafex representatives during the visit to the Spanish Ambassador in Maputo.

“In large infrastructure projects in Mozambique, Spanish companies can make contributions”

To attract private investors and share the costs, Mozambique has adopted a legal framework that develops public-private partnerships (PPP). So far, it has been the mining industry that has stimulated the development of rail-port systems and has led the modernization of the railway network around corridors linking the countries of the interior to the ports of Mozambique. The corridor that arrives to the port of Maputo in the south, the port of Beira in the centre and the port of Nacala in the north, are the main centres for regional economic development, including the transport of persons and passengers, which has also been anticipated by CFM.

In these large infrastructure projects Spanish companies can contribute a lot. Mozambique has sympathy and admiration towards Spain, and knows the technology and the capacity Spanish companies have in this field. Spain already left its mark in Mozambique when, during the late eighties, RENFE technicians supported Caminhos de Ferro to train staff and develop the Beira Corridor. Today exports of railway equipment from Spain to Mozambique are in a good position within our trade flows, although they are still very modest. I am honestly very glad that Mafex is betting on Mozambique and that it has taken the initiative to explore this market and encourage their companies to know and explore it. There is no doubt we all have much to gain. The Spanish Embassy in Maputo is available to support companies in the Spanish railway sector who wish to seize market opportunities in this country. 🇪🇸

Spanish companies travel to Turkey, Brazil and Chile

THREE PRIORITY MARKETS FOR THE SPANISH RAILWAY INDUSTRY AND WHERE ITS PRESENCE IS KEY FOR THE RAIL DEVELOPMENT OF THESE COUNTRIES

During the last quarter of 2014 Mafex organized a trade delegation to Turkey (November 3rd – 7th) and another delegation to different cities in Brazil and Chile (November 23rd – 28th).

The primary managers of the railways of the three countries received a fortnight of companies that participated in both trips. Thus, in Turkey, a large group of companies met with senior officials of the Turkish Railways (TCDD), the Municipality of Istanbul, Istanbul's subway operator: Ulasim Istanbul, Ankara's Municipality and other companies in the sector located in the country. At the same time, the Ministry of Infrastructure of the State of Ceará, Fortaleza's Metro and Transnordestina Logística in Brazil, and the Empresa de los Ferrocarriles del Estado de Chile, Santiago's Metro, the Arica-La Paz railway and Ferrocarriles del Pacífico in Chile had the opportunity to meet another large delegation of Spanish railway companies.

Turkey: Great presence of the Spanish industry

The participation of Spanish companies in the railway sector in Turkey is reflected in the high number of projects in which Spain has participated during the last decade. Its technology has been selected for the first high speed line in the country, the commuter line in Izmir, the light rail in Bursa or even for



Meeting of the Spanish trade delegation with Turkish railways TCDD.

the electrification of railway lines such as Irmak-Zonguldak, among others.

Brazil and Chile: Priority Destinations for Mafex members

Brazil relies on the Spanish railway industry to carry out its ambitious plan to transport infrastructure, with an investment of over 20,000 million euros. This country has become the main destination of the sector in Latin America, followed by Chile. In the first eight months of the year, exports of associated companies associated to Mafex in Brazil totalled 116.1 million euros. Indeed it is a figure that is increasing and indicates the route with services and technological solutions "Made in Spain" in this market.

Among the projects in which Spain has participated, we must highlight the increasing number of metro networks such as Rio de Janeiro, Sao Paulo, Brasilia, Fortaleza, Re-

cife and Porto Alegre. At the time, these contracts were awarded in all fields of activity, from engineering to the supply of rolling stock, signalling, security, etc.

Business Fair "Nos Trilhos" 1014

Also, since it has become a tradition, the Spanish railway industry was represented at the latest edition of the main rail fair in Brazil, which took place during November 11th – 13th. The Spanish participation came in the form of an Information Stand organized by ICEX, Spain Exports and Investment, in collaboration with Mafex, the Spanish Railway Association, and served as a meeting place for the many visitors that arrived to the event as representatives of Spanish companies, as well as to bring the Spanish technology closer to the Brazilian private and public institutions that were present at the event, such as Metro Sao Paulo, Metro Rio, ANTF, ANPTrilhos, ABIFER, VLI, etc. 🚂

Success of the Spanish industry at Innotrans 2014

MAFEX COORDINATED THE PARTICIPATION OF 53 SPANISH COMPANIES, OCCUPYING AN AREA OF 2.730 M2, IN THE TENTH EDITION OF INNOTRANS

During the fair, which gathered 139,000 visitors from over 140 countries, numerous innovations and services prepared to face the future's rail traffic were presented.

Mafex, once again, supported by ICEX Spain, Exports and Investment, participated, from September 23rd to 26th 2014, in the world known fair Innotrans.

Numerous innovations and services prepared to face the future of rail traffic were presented at the event which gathered 139,000 visitors from over 140 countries. The present edition of this biennial fair had a total of 2,500 exhibitors from 40 countries, including Spain, which held a total of 2,730 m² with 53 exhibitors from the Association.

As part of this broad representation, Mafex organized in its stand a series different visits and events such as the visit of the Minister of Public Works and Transport of Spain, Mrs. Ana Pastor, and the Presidents of Renfe and Adif, railway operator and administrator for the Spanish infrastructure, respectively. Also, the stand of Mafex hosted a meeting organized by ICEX Spain Exports and Investment which was attended by various international railway responsables.

First order innovations in all rail segments

The common denominator that characterizes the Spanish rail industry is the commitment to R + D + i and the variety and breadth of its services in areas such as management and execution of major works and railway construction. Changes which were very well re-



Stand of the Association at InnoTrans 2014

ceived at this edition of the world known fair. Undoubtedly, this event is key to present in detail the solutions provided by the Spanish industry to the global market. Also, it serves as an instrument to drive new business opportunities and collaboration with industry professionals, railway administrations and companies from all over the world. In this sense, Mafex is already working on the participation of the Spanish industry at InnoTrans 2016.

Mafex, present at the APTA fair in USA

Weeks after Innotrans, the American Public Transportation Association (APTA) organized from October 13th to 15th, the most important fair celebrated in the



United States. This event, which is celebrated every three years and was held in Houston, was the perfect opportunity for Mafex to establish alliances with various agencies and state/federal organisms involved in passengers and freight transport that promote different rail projects in the United States. Spain is an indisputable leader in public transport and national companies stand out widely in the fields of consulting, engineering, construction and/or equipment. This is why the Spanish railway industry took the opportunity to present its major technological developments to the US market, which is known to be under expansion and with attractive high-speed projects, as well as an urban transport portfolio 🚆



Visit of the Spanish Minister of Public Works and Transport, the President of Renfe and the Spanish Ambassador in Germany to the Mafex stand



Visit of the President of ADIF to the stand of Mafex.



Mafex
responsibles with
representatives of
Proinversion (Peru).

A large turnout of visitors



Visit of the Brazilian Delegation to the stand of Mafex.

INNOTRANS WAS A GREAT SUCCESS. MAFEX'S STAND WAS VISITED BY IMPORTANT PERSONALITIES OF THE INTERNATIONAL SECTOR.

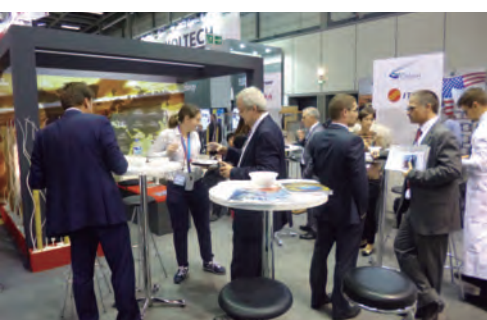


COMPANIES PARTICIPATING IN THE SPANISH PAVILION AND OTHER MEMBERS OF MAFEX PRESENT AT INNOTRANS:

- ▶ Actia Systems, S.A.U.
- ▶ Albatros S.L.
- ▶ Al-ko Record, S.A.
- ▶ Alstom Transport
- ▶ Ametsis S.L.
- ▶ Amurrio ferrocarril y equipos, S.A.
- ▶ Aquafirsch, S.L.
- ▶ Arcelormittal españa, S.A
- ▶ Bombardier Transportation
- ▶ CAF, Construcciones y Auxiliar de Ferrocarriles, S.A.
- ▶ CAF Power & Automation
- ▶ CAF Signalling
- ▶ CAF, S.A. Wheels and Axles Business
- ▶ Cables de Comunicaciones Zaragoza
- ▶ Ceit – IK4
- ▶ Cetest
- ▶ Cetren
- ▶ Colway Ferroviaria, S.L.
- ▶ Danobat, S.Coop.
- ▶ Duro Felguera Rail, S.A.U.
- ▶ Electrotécnica Artech Smartgrid, S.L.
- ▶ Fainsa
- ▶ Fundiciones Garbi, SA.
- ▶ Funor, S.A.
- ▶ Gamarra, S.A.
- ▶ GMV Sistemas, S.A.U
- ▶ Ikusi, Ángel iglesias, S.A.
- ▶ Implaser 99, S.L.L.
- ▶ Indra
- ▶ TSA. Industrial de Transformados, S.A.
- ▶ ITSS Iberica Tecnología Sistemas de Seguridad Ferroviarias, S.L.
- ▶ Ineco
- ▶ Ingeteam Power Technology S.A.
- ▶ Jez Sistemas Ferroviarios, S.L.
- ▶ Kelox, S.A.
- ▶ La Farga Lacambra, SAU
- ▶ LKS Diaradesign
- ▶ Luznor Desarrollos Electrónicos
- ▶ Manusa Door Systems, S.L.
- ▶ Masats S.A.
- ▶ MB Sistemas S. Coop
- ▶ Metalocauchó, S.L.
- ▶ Metalurgica Madrileña S.A.
- ▶ MGN,S.A.
- ▶ Nem solutions
- ▶ Nxgen Rail Services España, S.L.
- ▶ Oliva Torras, S.A.
- ▶ Patentes Talgo, S.L.
- ▶ Prae-trade, S.L.
- ▶ Seib Servicios Electrónicos Industriales Berbel, S.L.
- ▶ Sice
- ▶ Siemens AG
- ▶ Sistemas y Control Klantec, S.L.
- ▶ Talleres Alegria, S.A.
- ▶ Talleres Corral Mecanizados, S.L.
- ▶ Teltronic, S.A. Unipersonal
- ▶ Tecsa. Técnicas Electrónicas y Componentes, S.A.
- ▶ Thales España GRP, S.A.U.
- ▶ Uromac. Maquinaria del EO, S.A.
- ▶ Vossloh España S.A.



Representative of ANTF (Brazil) who won a trip in the Luxury Tourist Train Al Andalus, along with CEO of ICEX Spain Exports and Investment.



Networking in Mafex's stand.



Cocktail offered by ICEX Spain Exports and Investment in the Mafex Stand.



Jaime Hernani, General Director of AGEX group; Gerardo Alvarez Uriá, President of Mafex 2004-2005; Jorge del Fresno, President of Mafex in 2006 and Víctor Ruiz Piñero, current president of the Association.

MAFEX'S X ANNIVERSARY

Spanish railway companies and public institutions celebrate the tenth anniversary of the constitution of Mafex

The Spanish Railway Association held on September 16th 2014, the tenth anniversary of its creation in the same place where thirteen companies initiated on September 16th 2004, this road to boost the internationalization of the Spanish railway sector. Mafex currently has 72 members; each of them had a turnover of 181 million in 2004 and reached 4,000 million euros in 2013. The celebration, which coincided with the general assembly of the Association, was attended by railway administrations and industry organizations such as Renfe, Alamy's, Icx Spain Exports and Investment and ADIF, whose president, Gonzalo Ferre, conducted the closing ceremony of the celebration. The event, attended by the majority of members of Mafex, allowed recalling the trajectory of the association and its achievements to date, representing and promoting abroad an industry which is innovative, with a strong technology component and that

is capable of showing a Spanish railway model that is recognizable and exportable.

During the celebration, the three presidents that Mafex has had were honoured, as well as thirteen founding members of the Association. The help and support of institutions and administrations in the sector, especially from agencies such as Icx Spain Exports and Investment and the Spanish Commercial Offices in the world, also acquired a special mention in the event. 🇪🇸



Tenth Anniversary Celebration.

DANOBAT to supply process equipment for ore car repair shop in Australia

Danobat

Danobat will supply BHP Billiton Iron Ore the complete process equipment for its new ore car repair shop in Mooka, Western Australia.

The contract includes the design, manufacturing and commissioning of the process equipment for the maintenance and repair of ore cars.

The equipment includes 28 equipment units distributed along a main production line, a bogie shop, a structural shop and a wheel shop. The project has a very high level of automation utilizing both overhead gantries and Automated Guided Vehicles (AGVs) to move components and consumables to different stations automatically.

The project implementation includes, among others, preliminary engineering, manufacturing of critical equipment, purchase of specialized equipment, commissioning, training in the use of all equipment and technical backup



when the line goes into production.

To execute part of the work under Contract, Danobat has subcontracted Marand Pty Ltd, to supply part of the job.

Xabier Alzaga, Managing Director

at DANOBAT Railways, said: "This contract reinforces our long track record providing solutions for the railway industry and our references in offering turnkey workshops for renowned international customers", he said.



Supervision of the Tunnel of Izmir light rail, Turkey

Getinsa

Izmir Metro, Turkey, is in the process of being extended. As part of this enlargement, Getinsa will carry out supervision services for the construction of a tunnel to connect Evka 3 and Bornova Central Station of the Izmir Light Rail, with an approximate length of 1,165 m. This new consultancy and engineering contract involves some of our most relevant fields of expertise: from railway to mechanical and electrical engineering. With this assignment, Getinsa consolidates its position in the Turkish market where actually have 4 ongoing project.

Jesús Silva Fernández, new president of Ineco

Ineco

Jesús Silva Fernández has taken office as the new president of Ineco at the Ministry of Public Works and Transport, in the presence of Minister Ana Pastor. Silva was proposed as new president of the company last 14th November by Ineco's Administrative Board. Until now, Silva Fernández was Ambassador of Spain to the Republic of Panama.

Born in Seville in 1962, he's a Law graduate by the Universidad Complutense de Madrid. He has been Ambassador Representative of Spain to the Organization of Eastern Caribbean States (OECS), Ambassador Representative of Spain to the Caribbean Community – CARICOM, Ambassador of Spain to Jamaica and Ambassador of Spain to Bahamas, Antigua and Barbuda, Dominica,



Saint Lucia, and Saint Kitts and Nevis. Moreover, he has been president of the Assembly of the International Seabed Authority. In addition to this, Silva Fernández has also served as cultural advisor to the embassies of

Spain in Berlin and Bonn, has been Director of Cabinet to the Secretary of State for Cooperation and for Latin America, and he has also been Consul General of Spain in Rosario, Argentina.

The Brussels metro is to reduce its CO₂ emissions by 40%, thanks to Ingeteam technology



Ingeteam

Ingeteam has been selected by the Brussels metro operator (Brussels Inter-communal Transport Company or STIB) to supply five energy recovery systems which, together with other measures, will allow the company to lower its CO₂ emissions by 40% from now until 2030 and to cut its energy bill. One of these Ingeteam systems has already been installed in the Metro and, after confirming its good results, it was decided to increase the number of systems installed.

The Brussels metro is one of the most

modern metros in Europe, as it started operating in 1976. It has seven lines, 69 stations and more than 130 million users per year.

Within the framework of its commitment to sustainability, the STIB is implementing new measures to optimise energy consumption. With this aim in mind, the Ingeteam Ingeber technology was selected for its ability to recover between 10 to 30% of railway traction energy. Trains not only consume energy, but also produce energy through the heat generated during braking. Ingeteam has devel-

oped its own technology to recover this train braking energy.

After four years of investigation by the Ingeteam Traction Division and a three million Euro investment, the company has developed a system to convert this braking heat into electrical energy to be returned to the power grid. This system is ideal for sub-urban trains, trams and metros, given the fact that these are all required to make many stops, which is precisely when the Ingeber recovers the heat energy.

Currently five of these systems have been installed in the Bilbao Metro, three more in Bielefeld (Germany) and another in Malaga, for ADIF. With regard to the Bilbao metro, of the total amount of energy recovered using these systems, 30% goes to the sub-urban railway and 60% to the grid. Thanks to this technology, the metro returns to the grid the equivalent of the annual power consumed by 1,500 families. As far as the Malaga and Bielefeld projects are concerned, in the course of the first year Ingeber made it possible to recover 1 million kWh and 650.000 kWh / per year, respectively.

Mexico-Toluca intercity railway project award



CAF

The Mexican Secretariat of Communications and Transportation (SCT) has awarded the intercity railway project, which will link Mexico City with Toluca, to the consortium lead by CAF in partnership with companies Isolux-Corsán, AZVI and Thales. The contract is to be signed in December and amounts to circa €690M (VAT excluded). Approximately 49% of this amount pertains to the CAF Group.

CAF's scope of supply comprises the rolling stock with 30 EMUs of 5 cars each. With an approximate capacity for 700 passengers, including seating areas for Persons with Reduced Mobility, the Units will feature unobstructed interiors and gangways between cars, based on a mass transit design which ensures the highest quality and safety standards. In addition, CAF Signalling will supply the signalling and ATO systems,

the control centre and the onboard ERTMS equipment. Furthermore, the building company of the CAF Group, CMFS, will deal with the electromechanical facilities and partner with CAF Transport Engineering to carry out integration engineering and project coordination.

CAF has been involved in Mexican railroad projects since 1992 and supplied a number of Units for several Metro lines in the City of Mexico, coupled with the provision of maintenance services. In addition, the Company has supplied and operated, under a 30 year concession scheme starting in 2008, the Buenavista-Cuautitlán suburban railroad transit line in the City of Mexico D.F.

This contract builds on the Company's position as one of the leading rolling stock suppliers of the whole American continent, where in addition to the Mexican market, the Company has ongoing projects in the United States, Brazil, Colombia and Chile.

Idom is in charge of the project and design of Riyadh's Metro

Idom

The kingdom of Saudi Arabia is on the fast track to modernization, much like many other countries in the Persian Gulf. Improving urban mobility in its cities is one of the country's priority objectives.

Within the framework of this priority objective, is the development of the new Riyadh metro. Spread over 6 lines, the future network will be approximately 176 km in length and will have 89 stations. Crossing the city from north to south and east to west, the network will include workshops and depots as well as several park&ride facilities at strategic locations. Given their elaborate design, some of the stations will be landmarks within the urban fabric of the city. The ArRiyadh New Mobility consor-



tium, of which Idom forms part, was awarded the construction of line 3. Idom is responsible for the design and construction project for the infrastructure, stations, workshops, depots, as well as the urban integration of the works. Line 3 is 41 km in length, of

which 4.6 km runs through tunnels, 23 km over a viaduct, and 13.4 km above ground. The line has 20 stations and 2 buildings for workshops and depots.

It is expected the work will begin on the tunnels in the first quarter of 2015.

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Millones de decisiones críticas se realizan a diario en transporte. La capacidad para operar estas redes sin contratiempos y de forma eficiente es crucial para el crecimiento económico y la calidad de vida. Thales se encuentra en el centro de esto. Diseñamos, desarrollamos y dotamos equipos, sistemas y servicios



proporcionando soluciones de-extremo-a-extremo. Nuestra tecnología integrada aporta soluciones, permitiendo a nuestros clientes y a los usuarios finales obtener respuestas más eficaces en entornos críticos. Juntos, en cualquier lugar marcamos la diferencia con nuestros clientes.

THALES
Together • Safer • Everywhere

Thales and Siemens to provide rail safety and traffic control technologies on the Olmedo-Ourense high-speed line



Thales Spain & Siemens Rail Automation

The board of directors of Adif Alta Velocidad has awarded the project to the two companies for an amount of 512 million euros.

The signalling, railway traffic control and automatic train protection systems guarantee the safety of the line, passengers, rolling stock and railway facilities.

Adif has awarded the joint ven-

ture (55/45) formed by Thales España and Siemens Rail Automation a contract for the installation of traffic control, automatic train protection, telecommunications and safety technologies on the Olmedo-Ourense high-speed line section, as well as for maintenance over a 20-year period. The amount of the contract is 512 million euros. Thales is to install the ERTMS lev-

el 2 automatic train protection system, wayside LED light signals, axle counters for safe train detection, wheel sensors and land-line telecommunications systems. Thales will also be responsible for installing new state-of-the-art electronic interlockings at several stations on the Medina del Campo-Zamora-Ourense conventional line affected by the work on the high-speed line.

The company will also provide all GSM-R mobile communications systems, power supply for the facilities, auxiliary detection systems, equipment buildings and auxiliary building work.

Siemens, for its part, is to install its safety solution based on electronic interlockings and associated technologies, with the ASFA system, centralised traffic control, supply of balises, track circuits, video surveillance systems and access control. This 331 km section will benefit from ERTMS level 2 standard allowing a maximum speed of 350 km/h and reducing the journey to 2 hours. In 2018, it will provide a high-speed railway link between Ourense in Galicia and Olmedo near Valladolid. The Madrid-Valladolid section came into service in December 2007, forming the first leg of the Madrid-Galicia high-speed line, and in December 2011 passenger operations began on the Ourense-Santiago de Compostela-A Coruña section. The Olmedo-Ourense section will complete this Spain's main high-speed corridors – the North-Northwest line – and will link the regions of Galicia, Asturias, Cantabria, Castilla León and Madrid.

Thales and Siemens have extensive experience in Spain and other countries, with railway safety systems on high-speed and conventional lines. The two firms have jointly carried out projects on various Spanish high-speed lines.

Manusa installs three tunnel partitioning doors in Barcelona Metro L9

Manusa

Manusa, a leading company in automatic doors and access control systems has manufactured and installed three large dimension tunnel partitioning doors for section II of Line 9 in Barcelona Metro.

The three identical doors, 4 metres wide by 3,7 metres high approximately, withstand a pressure greater than 2.000 Pa and have smoke-resistant properties with a maximum resistance to fire of 120 minutes. Each door is equipped with a fire-resistant EI120 pedestrian door to allow people passage in the event of fire, when the tunnel partitioning doors will close to prevent smoke and fire spread in the tunnel.

The metal structure supporting the doors consists of a series of telescopic adjustments that allow easy and quick adaptation to the irregularities always present in construction works, respect-



ing the demanding applications required in these type of installations.

Regarding control, the doors interact with the track signalling and the stations and tunnel fire-prevention system, meeting a SIL3 safety grade, allowing them to guarantee Siemens UTO system reliability (without driver and without conductor) that governs the circulating convoys in this metro line.

The three tunnel partitioning

doors have been tailor-made manufactured under turnkey project in the record time of three months, in which Manusa has completed both fabrication and installation thanks to its technological and engineering capability. Manusa, with over 45 years of experience, develops and manufactures all its products. Along with Spain, the company has branches in Portugal, Brazil, Singapore and India, and presence in over 70 countries worldwide.

Passenger operation has begun: New Vossloh Citylink NET 2012 LRV on the rails in Karlsruhe

Vossloh Spain

The first Vossloh Citylink NET 2012 light rail vehicles entered passenger service in Karlsruhe on October 18, after the festive rollout on October 17, 2014.

Karlsruhe transport operators VBK and AVG ordered 25 vehicles in October 2011 with options for up to 50 more. They are being supplied through a consortium between Vossloh España and electrical equipment supplier Vossloh Kiepe. The Citylink Net 2012 is a barrier-free Train-Tram that connects the area surrounding Karlsruhe with the inner city of Karlsruhe contributing considerably to high urban mobility.

The three-section unidirectional LRVs are 37.2 m long and 2650 mm wide and 80% low-floor and fulfill the increasing requirements for



mobility and passenger comfort. The BOStrab approval certificate for the vehicle was formally handed over to VBK at InnoTrans on Sep-

tember 25, 2014. EBO approval will follow making it the first low-floor tram-train vehicle to be approved for both BOStrab and EBO.

Alstom Spain participates in the Dubai tram project, the world's first 100% catenary-free line

Alstom Spain

Dubai Roads and Transport Authority (RTA) has inaugurated last November the Dubai Tram, the first Tramway in the entire Gulf region. The Dubai Tramway includes many Alstom's technological breakthrough. It is the first tram in the world able to run in temperatures of up to 50 °C and to withstand harsh climate conditions such as humidity and sandy atmosphere. Equipped with APS ground-level power supply, the system is also the first in the world to be catenary-free all along the line.

In this emblematic project, Alstom teams in Spain have had an important role. Experts in the Alstom signalling laboratory located in Madrid have helped in the CBTC signalling system implementation. They have been also in charge of the design, implementation and commissioning of the passenger information, video surveillance, communication and security systems.



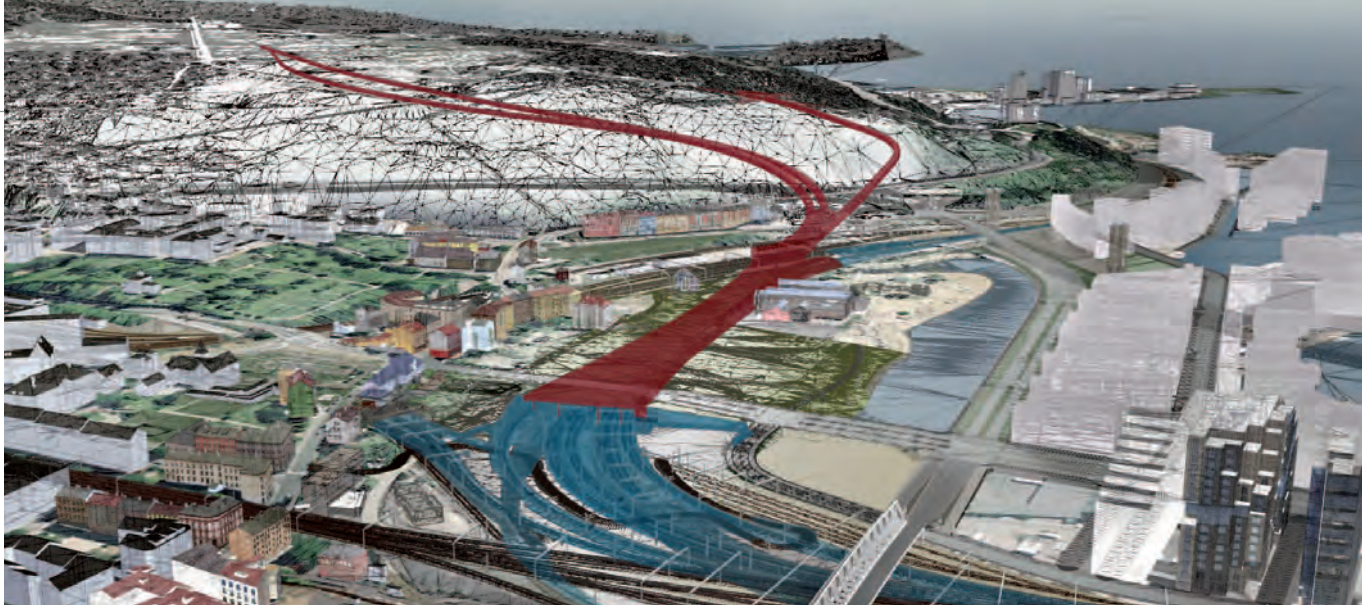
PRIMOVE, sustainable mobility becomes a reality

Bombardier Spain

As societies face growing pressure to reduce CO2 emissions and find solutions to ongoing urbanization, the timing for clean and more sustainable forms of mobility is right. A need for a change is recognized, a change that will come through e-

mobility, which is key to shift from fossil fuels to cleaner energy sources. The complete PRIMOVE e-mobility portfolio offers vehicle manufacturers and operators a flexible package of sophisticated solutions for both electric rail and road vehicles. Bombardier's e-mobility portfolio began with PRIMOVE no-cable charging system, which provides a source of

energy for all electric vehicles. PRIMOVE battery for public transport vehicles allows recharge with the minimum weight and volume that currently exists in the market. Furthermore, Bombardier offers PRIMOVE propulsion and control solution and feeding equipment BOMBARDIER MITRAC that manages to increase the overall efficiency of the electric buses.



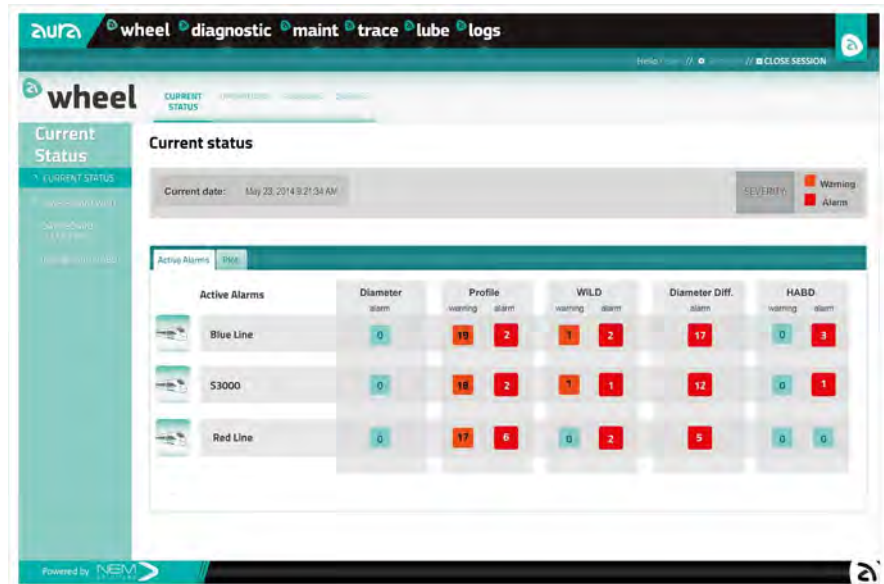
Assistance on the rail connection between Oslo and Ski

Sener
Sener has provided assistance in the tender of two turnkey contracts on tunnels in Norway for the future high-speed Follo Line, which will connect the Norwegian capital with the city of Ski. There will be a total of 22 km of double track of which 19 km will run through a twin tunnel, making it the largest in the country.

The first contract is for the conventional tunnels and will include the civil engineering work for a triple track tunnel (140 m), the new inbound Østfold line (1,200 m), and D&B of the two twin tunnels (530 m), as well as crossings under several roads and oil transport tunnels and a change of routing of the Alna River.

The second contract is for tunnels to be dug with tunnel boring machines (TBMs) and covers the civil engineering work and the electrical, mechanical and telecommunications systems for the 19 km twin bore tunnel, the assembly caverns for the TBMs and tunnels for the rescue station, located in the Asland area.

NEM Solutions leads the Saudi Arabian rail market in services for wheelset management and life extension with a new order from Saudi Arabia Railway Company (SAR)



Nem Solutions
Saudi Arabian construction company RTCC (Al-Rashid Trading & Contracting Company) has awarded NEM Solutions with a new contract for advanced wheel life cycle management for Saudi Arabia Railway Company's (SAR) workshops. With this contract, SRO (Saudi Railways Organization) and SAR, the two most important

companies operating the railways, are provided with AURA wheel, a tool of cutting-edge technology in terms of wheelset management. The order includes two automatic wheel profile parameter measurement systems. A.U.R.A Wheel provides full management of the long-term planning of railway bogie and wheelset maintenance, reducing uncertainty and

over-maintenance in the planning of maintenance activities throughout the lifetime of wheelsets and of the rolling stock fleet. This leads to a more efficient and effective maintenance, and increased fleet availability for service operation. Since their first contract in 2012 with SRO, NEM Solutions has monitored and managed the condition of over 40.000 wheel-profiles, ensuring an extended lifetime of maximum exploitation. This has been key to the fleet which operates in a harsh desert environment. A.U.R.A wheel, currently manages wheelsets of over 36.000 vehicles, and this is expected to rise in 2015 by 40%. The ability to use Big Data techniques gives NEM Solutions increased knowledge and ability to extend wheel life cycles in accordance with customer needs. This new contract establishes the growing Basque company as a leader in Saudi Arabia of advanced rolling stock management and early fault diagnostics for SRO and SAR fleets.

Ana Pastor, Spanish Minister of Public Works and Transport

“The budget destined to the railway s



THE SPANISH GOVERNMENT IS STILL COMMITTED TO SUPPORT THE SPANISH INDUSTRY INTERNATIONALLY AND ALSO CONTINUE INVESTING IN THE IMPROVEMENT OF THE EXISTING SPANISH INFRASTRUCTURE. THE MINISTER OF URBAN WORKS EXPLAINS IN DETAIL THE FUTURE INVESTMENTS FOR THE COMING YEARS.

“Spanish companies have a portfolio of international projects of over €74,000 M and international tenders regarding infrastructure awarded from January to October 2014 in which Spanish companies have participated reach over €41,000 M”

MADRID. SPAIN

The Spanish Minister of Public Works and Transport, Ana Pastor, provides an overview of the Spanish railway situation at 3 years after her election.

Ana Pastor. In recent years, investment in rail transport in Spain has been affected by significant cuts. However, according to the State Budget for 2015, it is expected an increase of almost 14% over the previous year. Could you give us an overview of the current and future Spanish railway situation?

In Spain we have a rail network of 15,000 kilometres, of which nearly 3,000 km are high speed. The railway sector generates nearly 50,000 direct jobs and 400,000 indirect jobs



Ana Pastor during a trip to Saudi Arabia that was organized on the occasion of signing the contract for the AVE Medina-Mecca.

in our country. Therefore, we are facing a sector of great importance both economically and socially as it contributes to the mobility and territorial cohesion. From the beginning of the term, the total budget dedicated to rail amounted to 27,200 million euros. Next year, the amount will be 9.260 million. The three most important milestones or achievements have been the AVE Barcelona-Figueras, the AVE to Alicante and the initiation of international high-speed services to France. But there is still work to do because, as you know, next year the arrival of high speed to different Spanish cities is planned. Along the work we have developed in infrastructure, we have also launched a new trade policy in Renfe so that a greater number of citizens have access to the services of this mode of transport. Since the

sector will reach €9,260 M in 2015”



launch of the new trade policy, both the number of passengers, income and occupation have increased.

It seems that the high speed will remain supported by major investments, with 70% being the largest budget item on rail. Could you please give us more details?

The investment for 2015 destined to railways is amounted at 5,200 million euros, representing, in fact, almost a 14% increase. 3.561 million euros will be invested in High Speed. We will also dedicate a major effort to improve the situation of conventional lines and commuter services. On the railway line Palencia-Santander, for example, 95 million euros are being invested to improve the electrification and security systems, allowing savings of half an hour on this journey.

Changing the conversation to international markets, Spanish companies have their eyes abroad in many markets occupying leadership positions. What qualities do you consider the sector to have to become a leader in new transport plans around the world?

We realize that one of the focuses of this government is to support the internationalization of our companies, which means focusing on the export potential of our country. With the experience of large infrastructure built on our territory, Spain has large corporations that are world leaders in infrastructure development. This position, due to an already extensive experience, and this know-how in the field of transport infrastructure, has opened business opportunities and expectations for our engineer-

ing companies, for our professionals and for the Spanish economy in general.

This is also leading to the creation of mixed public-private partnerships, some of which already present excellent results in the Middle East, Europe and America. Probably the most emblematic case for its social and economic importance is the AVE to Mecca, the largest contract won by Spanish companies outside our borders (€6,736 M). From a broader perspective, note that the Spanish companies have a portfolio of international projects that exceeds 74,000 million euros and international tenders for infrastructure which were awarded from January to October 2014, with the participation of Spanish companies, amount more than 41,000 million euros. **Continues ►**

The Minister of Public Works and Transport during one of her visits to a railway construction.



Spanish experience is our best resume

“Among the most prominent international cooperation agreements are infrastructure and transportation with Brazil, Argentina, Ecuador or Mexico; and cooperation agreements in the field of railways and roads with India”

In this external drive, being supported in areas such as promotion is a cornerstone for businesses, especially for SMEs. How is the role of associations as Mafex seen?

As indicated before, the experience of Spanish companies is the best cover letter to introduce ourselves to other countries. The excellent infrastructure that has been conducted over the past decades in our country is a reference outside our borders and, therefore, everything done to promote the sector of civil engineering and publicize their good work is welcomed, just like you (Mafex) do.

In this area, what is the strategy proposed by the Ministry of Pub-

lic Works and Transport to support the internationalization of the railway sector and specifically for Spanish companies?

Supporting the internationalization of our companies is one of the priorities of the government of Spain and our department supports and promotes the internationalization in the field of infrastructure, transport and housing. In the last three years we have signed important agreements on cooperation in infrastructure and international transport in general. Among the most prominent international cooperation agreements are infrastructure and transportation with Brazil, Argentina, Ecuador or Mexico; and cooperation agreements in the field of rail-

ways and roads with India. In addition to these agreements other cooperation contracts have been signed for maritime transport with Angola; or the memorandum of understanding with Algeria by which Spanish companies will build at least 50,000 homes in Algerian land.

I would also like to refer to some of the most important projects in which Spanish companies work today. Among them are the high speed train between Mecca and Medina, to which I referred before; the construction of Riyadh Metro; the High Speed line Ankara-Istanbul; design, construction, operation and maintenance of Line 2 Metro Lima; Metro Line 1 of Panama; the expansion of the Panama Canal; granting "Connecting Pacific I" in Colombia; the second phase of construction of Line 4; and East West Link project in Australia.

Liberalization of the sector

Finally, could you briefly explain the current situation regarding the liberalization of the sector? At what point are we and what is planned for 2015?

In November we took the first steps towards the liberalization of the corridor in Levante. We have just made available for public information the ministerial order that will determine the requirements and conditions required to participate in the tender of such certificates, award criteria and the various stages of the procedure, as well as the rights and obligations applicable to the contractor. All this will soon make possible the tender for the Sector Levante's authorization certificate, so that the new operator can start business effectively throughout 2015. The objective is to take full advantage of the extraordinary railway infrastructure we have now, increase the number of rail operators, expand access of citizens to High Speed through a substantial reduction in prices, increase the



The Minister of Urban Works and Transport of the US, Anthony Foxx, during a visit to CRC High-Speed traffic in the station of Atocha, Madrid.



In the picture above, Ana Pastor during her visit to the Port of Barcelona, where she attended the launch of three new super post panamax cranes at the terminal Best on November 18th.

volume of goods transported by rail and adapt the supply of rail services to current demand. If everything progresses as expected, next year we should start to run the first passenger trains owned by a private operator on this line. 🚂

“If everything progresses as expected, next year we should start to run the first passenger trains owned by a private operator on this line”



Transport plans will increase the existing infrastructure to enable communications in Tijuana, Merida, the region of La Laguna and the eastern part of the State of Mexico, among other projects.

Mexico will carry out 13 major rail projects

MEXICO'S NATIONAL INFRASTRUCTURE PLAN FOR 2014-2018 INCLUDES A COMPREHENSIVE ACTION PLAN TO IMPROVE THE NATIONAL AND METROPOLITAN RAIL NETWORK. INVESTING IN 13 MAJOR PROJECTS, FROM WHICH FIVE ARE DESTINED TO PASSENGERS, FOUR TO FREIGHT AND OTHER FOUR TO URBAN TRANSPORT, WILL RESULT IN MODERNIZATION OF CURRENT TRACKS, EXTENSION OF LINES, SIGNAL SYSTEMS AND THE CONTRACTION OF NEW TERMINALS.

● FERROVALLE

● KCSM

- 1 Contrimodal
- 2 Encantada
- 3 Lázaro Cárdenas
- 4 LIT Terminal
- 5 Logistiks Terminal
- 6 Multimodal Amigo
- 7 Pantaco (Cd. de Mexico)
- 8 Puerto Altamira
- 9 Puerta Mexico (Toluca)
- 10 Querétaro
- 11 Rojas Ramp (Ramos Arizpe)
- 12 Salinas Victoria (Monterrey)
- 13 San Luis Potosi
- 14 Silao
- 15 Veracruz

FERROMEX

Intermodal

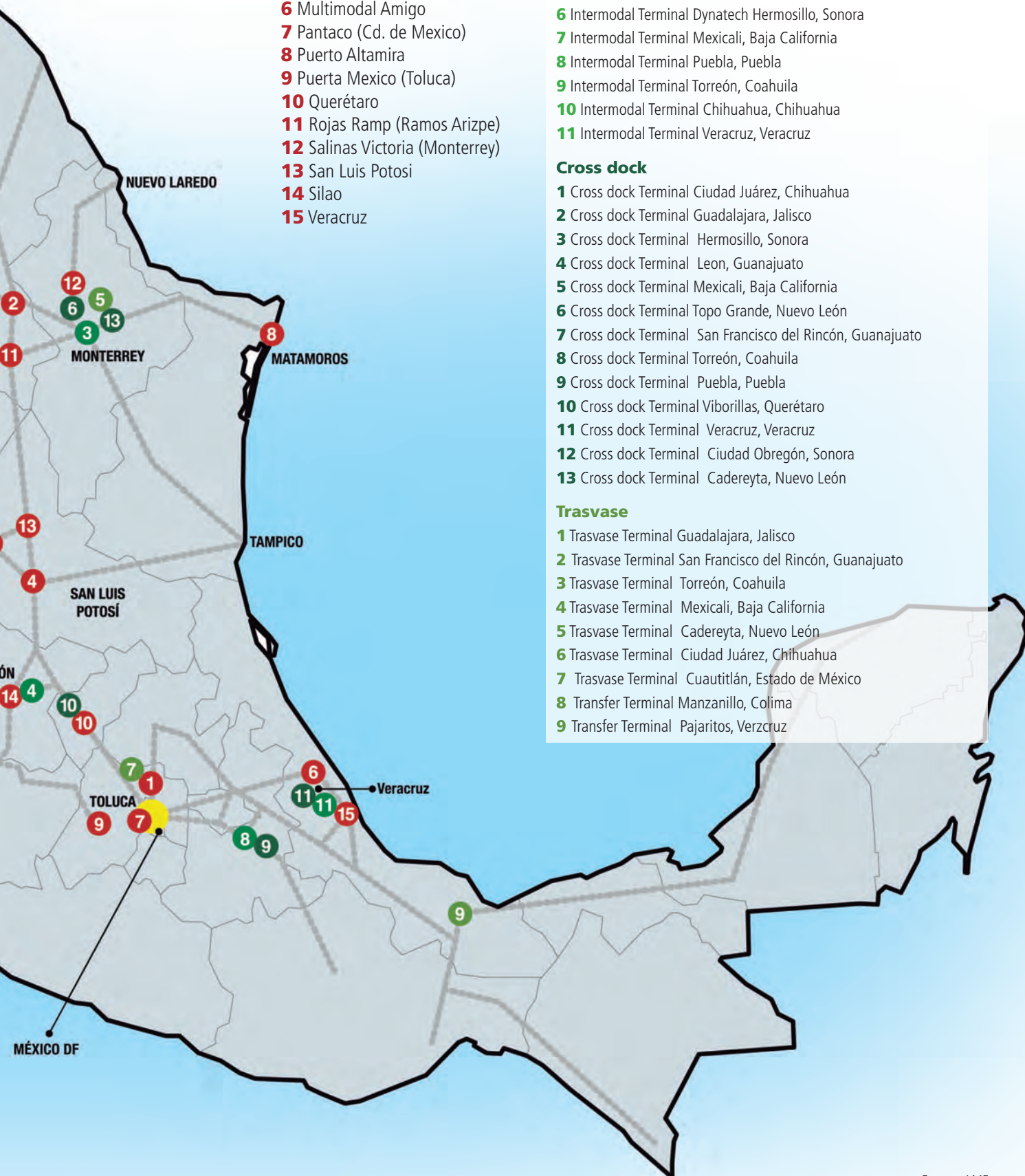
- 1 Intermodal Terminal Guadalajara, Jalisco (TCIG-I)
- 2 Intermodal Terminal Guadalajara, Jalisco (TCIG-II)
- 3 Intermodal Terminal Escobedo, Nuevo León RECINTO FISCALIZADO
- 4 Intermodal Terminal Silao, Guanajuato RECINTO FISCALIZADO
- 5 Intermodal Terminal Ciudad Obregón, Sonora
- 6 Intermodal Terminal Dynatech Hermosillo, Sonora
- 7 Intermodal Terminal Mexicali, Baja California
- 8 Intermodal Terminal Puebla, Puebla
- 9 Intermodal Terminal Torreón, Coahuila
- 10 Intermodal Terminal Chihuahua, Chihuahua
- 11 Intermodal Terminal Veracruz, Veracruz

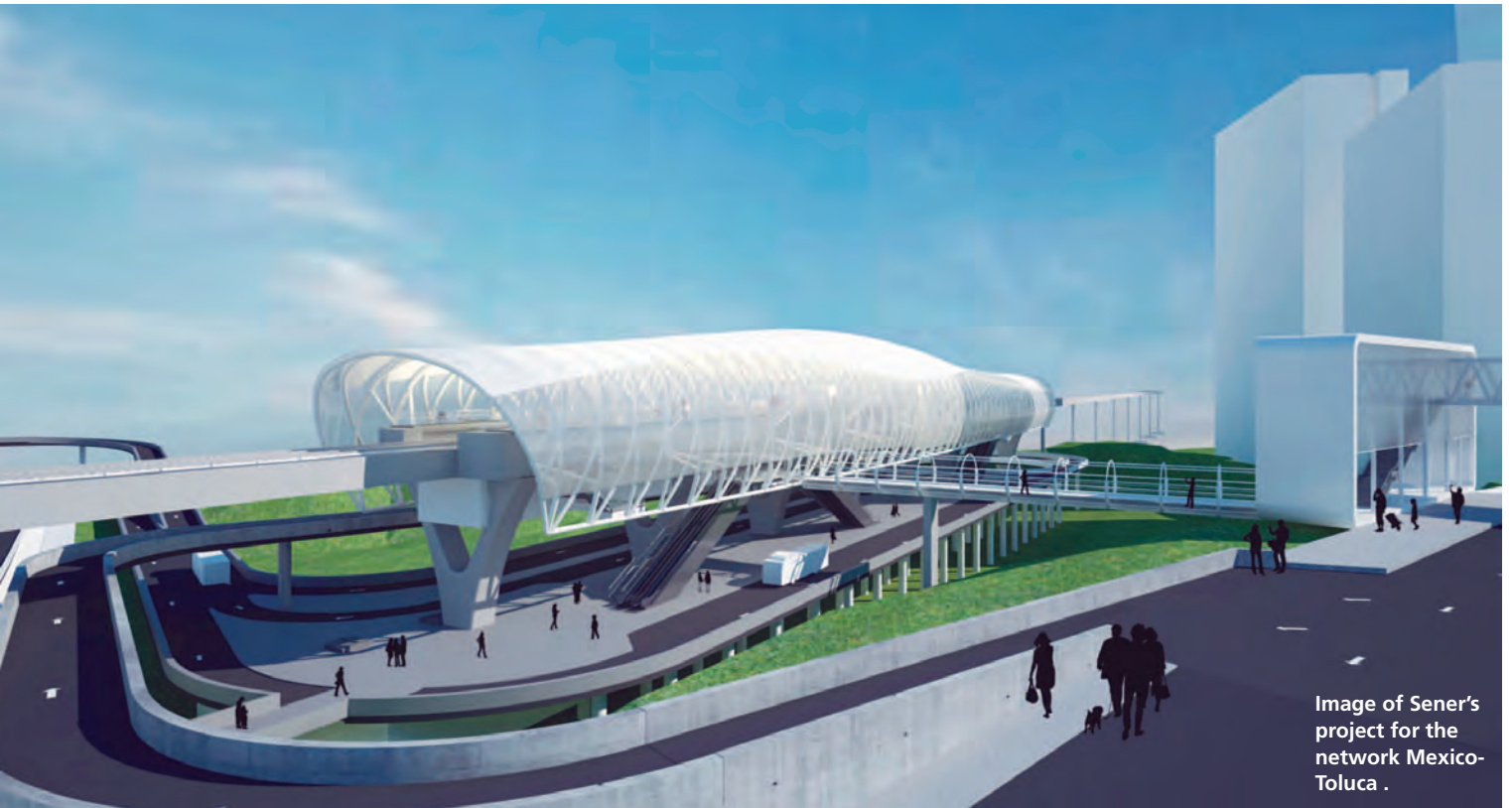
Cross dock

- 1 Cross dock Terminal Ciudad Juárez, Chihuahua
- 2 Cross dock Terminal Guadalajara, Jalisco
- 3 Cross dock Terminal Hermosillo, Sonora
- 4 Cross dock Terminal Leon, Guanajuato
- 5 Cross dock Terminal Mexicali, Baja California
- 6 Cross dock Terminal Topo Grande, Nuevo León
- 7 Cross dock Terminal San Francisco del Rincón, Guanajuato
- 8 Cross dock Terminal Torreón, Coahuila
- 9 Cross dock Terminal Puebla, Puebla
- 10 Cross dock Terminal Viborillas, Querétaro
- 11 Cross dock Terminal Veracruz, Veracruz
- 12 Cross dock Terminal Ciudad Obregón, Sonora
- 13 Cross dock Terminal Cadereyta, Nuevo León

Trasvase

- 1 Trasvase Terminal Guadalajara, Jalisco
- 2 Trasvase Terminal San Francisco del Rincón, Guanajuato
- 3 Trasvase Terminal Torreón, Coahuila
- 4 Trasvase Terminal Mexicali, Baja California
- 5 Trasvase Terminal Cadereyta, Nuevo León
- 6 Trasvase Terminal Ciudad Juárez, Chihuahua
- 7 Trasvase Terminal Cuautitlán, Estado de México
- 8 Transfer Terminal Manzanillo, Colima
- 9 Transfer Terminal Pajaritos, Veracruz





Improved communications

Mexico's rail infrastructure has 26,727 km of railways, of which 20,722 are part of trunk roads, mostly concession, 4,450 are secondary roads and 1,555 km are private ones.

As approved in the National Infrastructure Plan for 2014-2018, Mexico will carry out 13 major rail projects. Executive plans on urban transport will increase the existing infrastructure to invigorate communications in Tijuana, Merida, the Laguna region and the eastern area of the State of Mexico. The plan aims to promote the expansion of services in existing tracks in other cities like Guadalajara, Monterrey, Aguascalientes and San Luis Potosí. The works to be carried out include the following:

Aguascalientes-Guadalajara

Thanks to this project, the distance between Manzanillo and Altamira will decrease in 200 kilometers and the travel time in 16 hours.

Transpeninsular Train

The construction of this passenger train will be a project to help mobilize more passengers in the Yucatan peninsula. At the same time, it will be key to the development

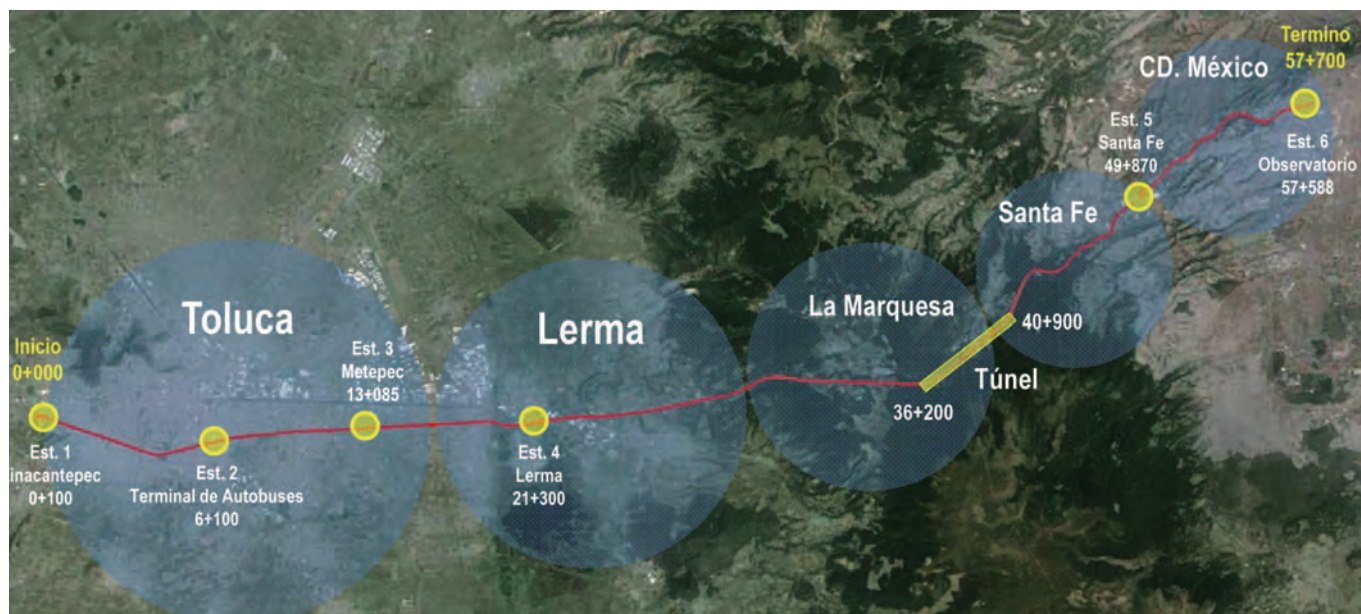
and expansion of tourism in the region. This project initiated the works in 2014 with an investment of €1,057 M.

Freight: More Speed

Regarding freight traffic, which accounts for 27% of transport, the aim is to increase the speed to expedite such communications and achieve in a few years the mobilization of a third of the country's goods transport.

In this case, three ring projects arise. First, in the city of Manzanillo a tunnel of more than 500 metres long will be built, improving traffic to the port. Furthermore, the works of Coatzacoalcos and Celaya, as well as those that will take place in Matamoros, aim to reduce the risk associated with railway traffic through these cities and improve business operations.

The following are considered to be the 3 largest projects: the trunk line Mexico-Toluca, the railway line Querétaro- Mexico City and Guadalajara's Metro Line 3.



MEXICO-TOLUCA INTER-CITY TRAIN

The project, with an investment of €2,274 M, will allow building a train to decongest the Mexico-Toluca highway. It will have six stations and its completion is scheduled for 2017.

Along with the train to Queretaro, this project will help decongest the main roads, in addition to being a service providing better quality of life because it will reduce travel time between cities, benefiting thousands of users that realize the route daily and, at the same time, it will improve access to the Western area of Mexico City. Sener, member of Mafex, will be in charge of the construction of the train, and will perform all the tasks required for the definition of the project's execution, as well as the commissioning of the complete line.

The project has two main purposes: first, improving and, above all, keep in optimal service levels the daily mobilization of at least 700,000 passengers registered within the corridor under a study that was carried out during 2012. Moreover this train will be a regional and urban transport backbone, allowing the organization and optimization of the operation of urban and rural areas contained therein.

The project itself connects two urban areas with different levels of development and urban density through a purely rural corridor with the characteristics of a national park. Over the past 20 years these two areas have grown significantly in population to unsustainable levels, ab-

sorbing conservation areas and whose consequences were anticipated during the 80's, when strong pressures on changing densities and land uses were exerted.

Today, both cities have expanded and invaded the forests in the Sierra de las Cruces. Thus, by the side of Toluca, its metropolitan area has been consolidated absorbing the village of Lerma and an area of the Zona Metropolitana del Valle de México has spread to nearby La Venta (Acopilco, Cola de Pato) and initiated a gradual but steady penetration on the lands of Parque Nacional Miguel Hidalgo (Desierto de los Leones).

Characteristics of the line

The proposed solution consists of a mass transit service in the form of a regional rail transport that is a safe, fast and comfortable alternative of passenger transport, which is also affordable in price and ecologically sustainable.

The project will have a total length of 57.7 km, 6 stations and a workshop. Its maximum speed is 160 km/h and the commercial speed will not exceed 90 km/h. Of the 6 stations, 2 are terminal (Zinacantepec and Observatorio) and 4 intermediate (Cristobal Colon, Metepec, Lerma, and Santa Fe). The length of the stations will be 200 meters and the line will consist of the following stations:

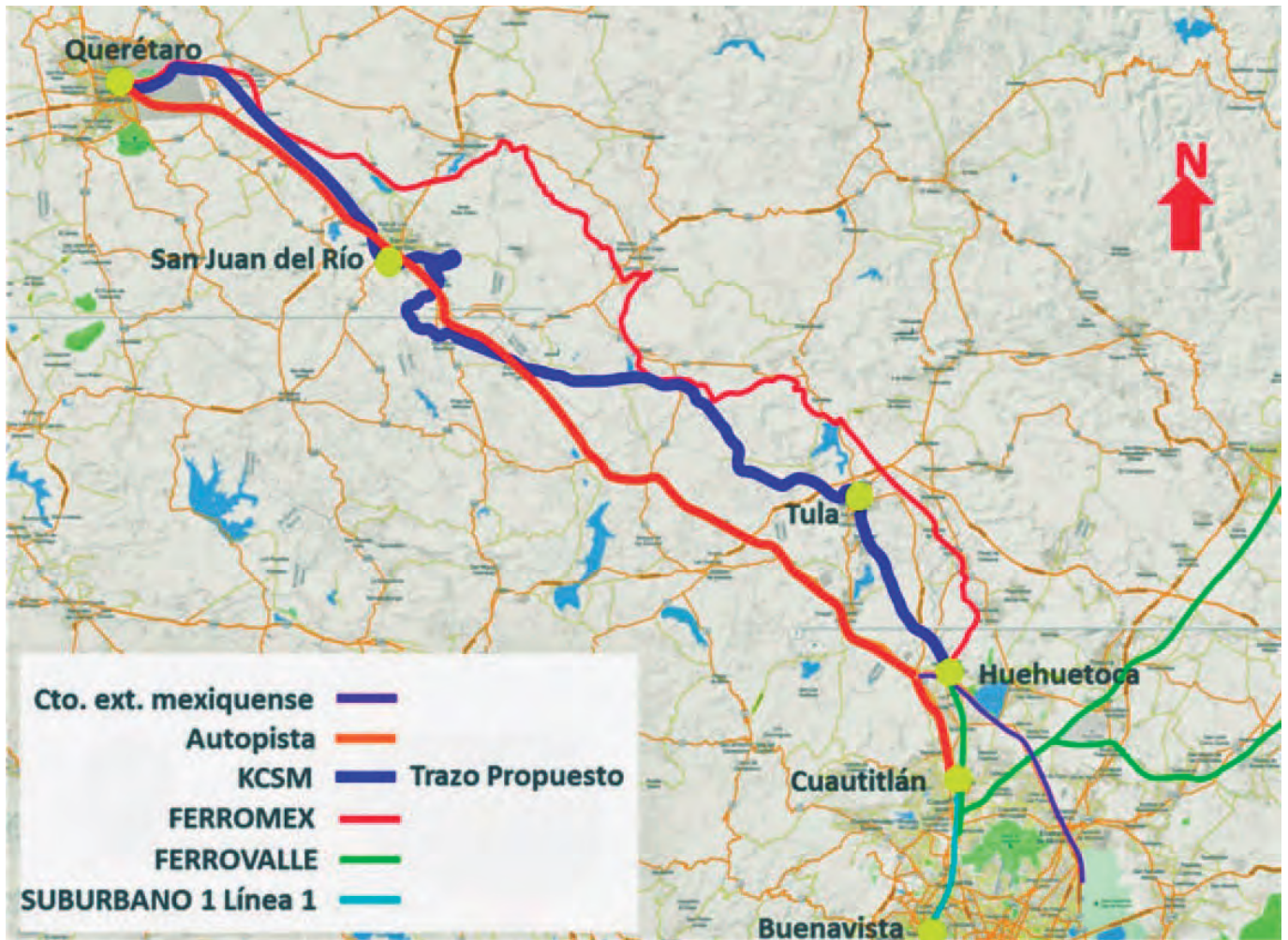
- 1) Terminal station - Zinacantepec;
- 2) Intermediate Station – Cristobal Colon;

- 3) Intermediate Station - Metepec;
- 4) Intermediate Station - Lerma;
- 5) Intermediate Station - Santa Fe; and
- 6) Terminal station - Observatorio

Commercial travel time of a train between the terminal stations will be approximately 39 minutes and the full itinerary will reach less than 90 minutes. The maximum capacity of the train in time of maximum demand will be 15,660 passengers at a frequency of 4-6 minutes, with a train capacity of 1,044 passengers (560 seated and 484 standing).

Isolux Corsán, CAF, Thales and Azvi: new awardees

November 25th, the consortium formed by CAF, Thales, members of Mafex, Isolux Corsán, and Azvi were announced to be selected as the contractor for the construction of the inter-city rail line linking Mexico and Toluca for a total amount of €690 M. The supply of CAF includes 30 units, consisting of 5 cars each, with an approximate capacity of 700 passengers. The trains will have a bright interior and hall intercommunication between cars, including spaces for people with reduced mobility. Thus, they will be designed for mass transport of persons, with the highest standards of quality and safety. In addition, regarding signalling systems, CAF Signalling will provide ATO system, the control centre and ERTMS on-board equipment.



HIGH SPEED TRAIN MEXICO-QUERETARO

The High Speed train that will connect Mexico City with the city of Querétaro will be the first passenger train of its kind in America: safe, comfortable and environmentally friendly.

It will transport 23,000 passengers daily over 210 kilometres at a maximum speed of 300 km/hr. Among the benefits it will bring is saving two hours in a single trip and four in round ones. It will generate 60,000 jobs in the construction phase, detonating the economy of the region.

The journey of this new train, which will run from the Terminal Ferroviaria de Buenavista, in Mexico City, will cross various municipalities of the states of Mexico and Hidalgo, until reaching the terminal station on Avenida Bernardo Quintana in Querétaro.

On July 25th, 2014, the Pre-Announcement in Compranet was announced, which was a firm step towards the crea-

tion of a rail passenger network that will help solve transport issues in the country. This High Speed train will be the backbone of a comprehensive transportation that, in the future, will enable transports to the region of El Bajío, besides being of great interest to the Spanish industry, which has always maintained good business relations with Mexico.

Its execution is expected to be operational in December 2017.

Characteristics of the line

The construction of this line includes sharing a double track until Huehuetoca, with the Commuter Rail.

The rest of the route will be a new double track where, in some sections, shall be parallel to the current load paths thus taking advantage of the current track direction. The average speed of the entire journey, estimated at 200 km/h, will be divided into 10 sections based on the greater use of the railway line Juárez-Morelos and the selection of

the best performance criteria for each section.

The project is programmed to start in the geographical latitude and longitude coordinates 19.4483 - 99.1517; and the end's coordinates are latitude 20.6037 and longitude -100.3792.

The rail corridor Mexico-Querétaro currently used for loading, is one of the fastest transit of goods in the country as it is a backbone for corridors who leave Mexico City and head towards the northern states of the Republic.

The infrastructure of this rail corridor, has the main lines called "A", Juárez, Morelos and "B", plus the respective secondary, auxiliary and private railways. Currently, these lines are used by four authorized freight companies: Kansas City Southern de México, Ferrocarril Mexicano, Ferrocarril del Sureste and Terminal Ferroviaria del Valle de México, as well as an authorized passenger transports enterprise (Ferrocarriles Suburbanos).

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MAFEX MEMBERS WITH PROJECTS IN MEXICO

► ALSTOM ESPAÑA

Metro L3 Guadalajara- The contract includes the supply, installation and commissioning of the trains, signalling and communication systems, control centre, electromechanical systems, tunnels, roads and substations.

► ARTECHE

Its auxiliary relés are present in the country in the following projects contracted in Spain: in Metrorrey contracted by CAF-Siemens and the LA and L12 of the Metro de Mexico built by CAF.

► CAF

On July 30th, the concession of line 3 of the Public Transport System Metrorrey was awarded to a consortium led by CAF consortium, including the supply of 22 units and related services during the period of the grant, which will be for 20 years. In addition, the Public Transport System (STC) awarded a contract for the lease of 30 trains of 7 cars each, for Line 12 of the Mexico City Metro. In 2007, this same consortium won the award for the supply of trains for the metro network in Mexico City, worth approximately €100 million. The contract included the delivery of 9 trains with mechanical suspension. In 2005, it won the award for 30 years of the suburban railway line in the metropolitan area of Valle de Mexico. CAF supplied 20 power units. Between 2004 and 2005 it supplied 22 articulated train unit to STC Metrorrey. In 2002, the consortium produced 17 full trains, formed by 9 cars each, and produced electrical components and rolling elements for all 45 trains in the Metro of Mexico.

► IDOM

Mexico-Puebla rail link: Among other tasks: Preliminary Studies and Demand Study, architectural design of four

passenger stations and architectural design and engineering for workshops and garages.

► INFOGLOBAL

Since 2007 the company has deployed various solutions in the Public Transport System (STC) of Mexico DF, both on land, with the implementation of communications systems (450 km of fiber and 250 nodes) and safety systems (3,500 cameras and alarm sensors 5,000), as with 90 trains with retrofit projects, equipping them with communication networks IP, CCTV (more than 1,500 cameras) and communication line side broadband (Wi-Fi) with own solution, TebaTREN. All these solutions have been integrated into the Operations Control Centre and in more than 22 local monitoring centers. Also, this great network has been complemented with the communications infrastructure required to have cell phone coverage inside the tunnels of the Metro's network.

► IMPLASER

Implaser developed special tiles for the platform edge combining photoluminescence with the touch podó.

► METALOCAUCHO

In the hands of the major manufacturers on Mexico, Metalocauchó participates in STC metro (Mexico DC), with trains from CAF, Bombardier and Alstom. This company also participates in the suburban network of the capital with CAF units and in the STC of Monterrey, with CAF units as well.

► SENER

Guadalajara's Metro Line 3: Sener has developed this work in its entirety, from the prefeasibility study to its preliminary design and line construction. Detailed design of the passenger train between Toluca and

Mexico DF: Writing the corresponding construction project. This is one of the largest contracts won by the company to date in the railway sector. It will consist of a comprehensive work in which Sener will develop all the tasks required for the definition of the project's execution and the commissioning of the complete line.

► SIEMENS RAIL AUTOMATION

Subway Line 3 of Metro Monterrey. Siemens will supply communications, signalling and control systems.

► THALES ESPAÑA

Suburban Railway line Cuautitlán - Buenavista - Mexico: Thales Spain was responsible for the design, installation and maintenance of signalling systems, train control and supervision of the project. It supplied its interoperable system ETCS Level1 decentralized AlTrac 6413 and 6415 embarked AlTrac subsystem, in addition to Electronic Interlocking LockTrac 6151/L 905E and the System of Centralized Traffic Control NetTrac 6617/CTC 1000. It also provided the necessary field elements, as well as supply systems and civil works associated to signalling. Thales Spain is currently performing maintenance on all of them.

► TYPESA

Transportation study to solve the problems concerning mobility of the metropolitan public transport system Indios Verdes - Ecatepec, one of the most saturated corridors north of Mexico DF. The development of alternative layouts for the elevated Metro was performed by Typsa (with 20 km and the architecture of 17 stations), as well as an analysis of structures, railway facilities, exploitation and railway operation and a selection of railway rolling stock.

GUADALAJARA'S ELECTRIC LINE 3

The expansion of the urban light rail system in Guadalajara area will have a total cost of €1.033 M and will benefit 233,000 people.

Thanks to the extent of this local line, the population of the metropolitan area of Guadalajara will benefit since it will help to relieve some of the main roads of the city, giving a better quality of life for citizens.

As an alternative of high quality and environmentally friendly, Line 3 of the Electric Train of Guadalajara will connect the cities of Zapopan, Guadalajara and Tlaquepaque.

This will benefit 233,000 people, users will reach faster various points of high influx such as health centers, recreational, commercial and educational institutions, among others, with a saving of about 40 minutes on their daily commute.

In a recent statement, the Secretariat

of Communications and Transportation (SCT) of Mexico stressed that world class companies will lead the construction work, which will have 16 intermediate stations, will connect with Line 1 and 2 of the Light Rail, and will arrive to the Bus Station of Tlaquepaque.

Characteristics of the line

The new line will have a length of 21.5 kilometres that will be covered in 33 minutes.

In total, the electric train will have 13 elevated stations and five underground; it will be built with more than 140,000 tons of steel and 445,000 meters of cubic concrete. In addition, around 5,000 direct jobs and 15,000 indirect ones will be created.

The Electric Train will be formed by 16 trains of two cars each, in which 500 passengers will be able to travel at a maximum speed of 90 km/h. The new line will feature the latest technology, plus an electronic payment system card compatible with Line 1 and 2, Macrobús, Pre-Tren and other means of public transport in the region.

On August 7th, the civil works of the first tranche of the works, which will cross Avenida Laureles and Avila Camacho, from Periférico to Federalismo, with an area of 8.6 km, have been initiated. The second section comprises a tunnel and the third, an elevated viaduct that will reach the Bus Terminal of Tlaquepaque.

The works are expected to end in 2017.

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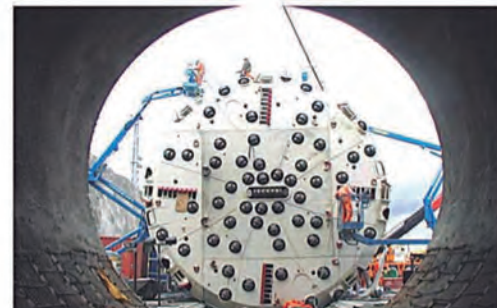
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Mexico, a good business opportunity

THE MEXICAN RAILWAY ASSOCIATION AND MAFEX HAVE BEEN WORKING TOGETHER FOR SEVERAL YEARS WITH THE AIM OF CREATING SYNERGIES BETWEEN MEXICAN AND SPANISH COMPANIES IN THE COUNTRY.

Iker de Luisa, General Director of the Mexican Association of Railways (AMF), explains that this association is formed by companies that provide rail services including freight, passengers and suppliers. Their efforts as an association are mainly focused on developing highly efficient railway networks to continue promoting the competitiveness of Mexico.

The rise in foreign investment in the country has as a key factor for the presence of railway infrastructure and connectivity between industrial parks, borders and ports. In turn, the railway is an important link in

the transport for the domestic market, moving both raw materials and finished products. "Given the importance that the railway system has taken, both cargo and passengers, the AMF maintains a close and proactive relationship with the federal government to generate charitable projects for the country," says Luisa. "This is why -the General Director of AMF continues- in the last two years we have been working on two Mafex visits with a dozen of Spanish companies who have come to Mexico to explore new business opportunities. What we do is put them in touch with partners who are potential customers and explain the current momentum in the rail sector".

Basic recommendations

The Mexican Railway Association, wants to stress on the fact that Mexico is a good business opportunity for the Spanish industry and that "the fact that the language and culture is very similar, makes it easier

to conduct business in Mexico - says Luisa -. Although I suggest finding a partner/ally that can help the Spanish industry to understand in a better way the legal, technological, administrative, economic and social aspects, among other." Once displaced the place, companies, almost entirely, encounter a problem. In the case of Sener, as it has been previously explained, "the technical team (during the development of Metro Line 3 Guadalajara) has faced the risks of working with a TBM earth pressure near the cathedral city, which leads to conducting a comprehensive risk control process, just like the company carried out in the tunnel of Sants Sagrera in the construction of the high-speed rail in Barcelona (Spain)".

Iker Luisa, in continuous contact with Mafex, used the interview to "congratulate Mafex for his work internationalization of Spanish industry and the dynamic support you when it comes to opening doors to other markets".



Bilateral meeting between members of Mafex and the Mexican Railway Association in May 2014.

Tourism



TOURISM IN MEXICO: A MILLION OF POSSIBILITIES

HAVING TO MOVE TO MEXICO FOR WORK IS NOT A PROBLEM TO ENJOY MEXICO DF AND THE COUNTRY'S WONDERFUL BEACHES. WE WANT TO SHARE SOME ADVICE IN CASE YOU HAVE SPARE TIME.

Mexico is a country that allows you to enjoy both its capital and its wonderful coastline. If you have a weekend, we suggest you visit Playa del Carmen to experience a relaxing time while enjoying spectacular beaches. The Riviera Nayarit is another option. It is a tourist area along 300 kilometres on the Pacific coast. If you would like to visit some cities in the interior of the country, we suggest travelling to Tijuana, famous for its festivals. In addition, for the day to day work, we give you some alternatives for you to fall in love with Mexico DF. 🍷

MEXICO DF CULTURAL VISITS

Palacio de Correos: This is one of the most important historic buildings of the city.

Plaza de la Santa Veracruz: this Square is located near the Alameda and the historic centre. Although it is small, the Plaza de la Santa Veracruz is notable for its colours and construction.

Iglesia de los indios: It is an ancient temple which, according to the tradition, was the home of the image of the Virgin of Guadalupe.

WHERE TO EAT

The restaurant El Cardenal is well known in Mexico DF. This is a typical location where you can eat different insects such as grasshoppers and other insects of the Mexican lands.

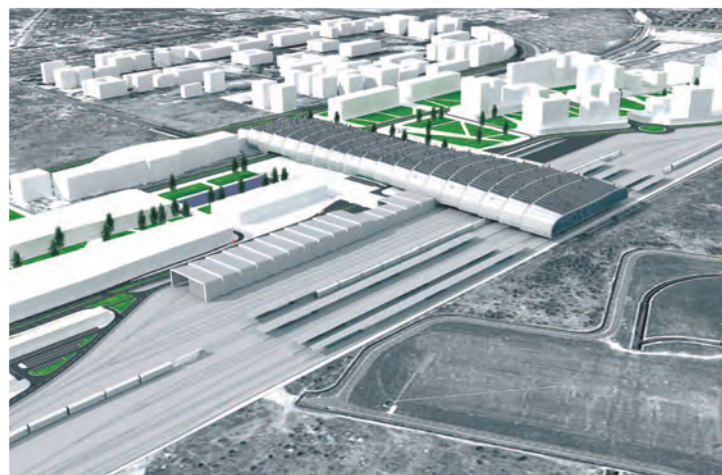
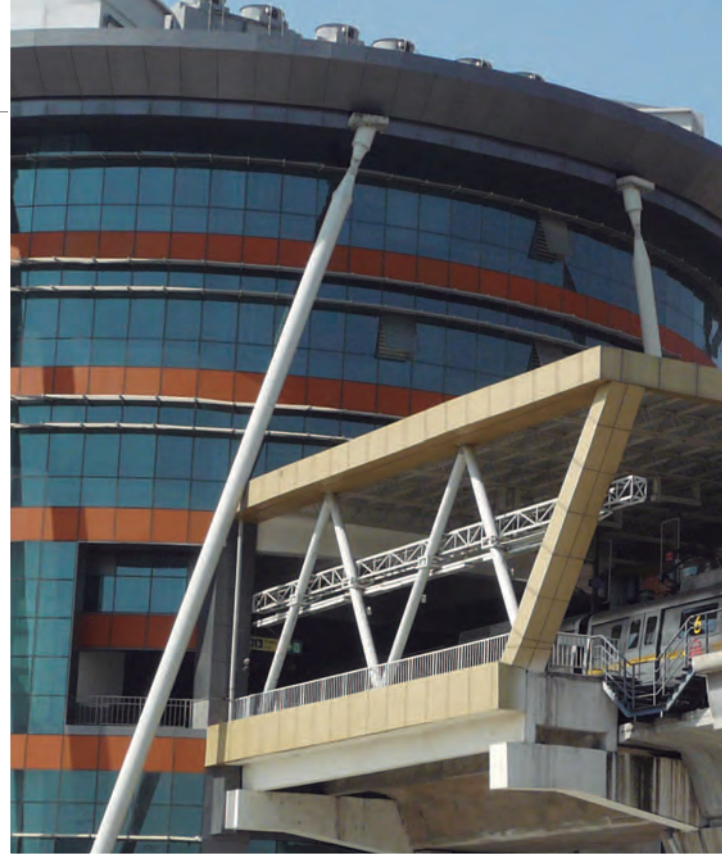
Restaurant San Ángel Inn. Besides tasting its delicious food, you'll enjoy its wonderful courtyard.

AREAS FOR LEISURE

Nightlife at Roma Norte and Condesa: It is a hipster area known for the numerous restaurants.

Six Flags México: Six Flags México has become one of the most important theme parks in Mexico and one of the largest in Latin America. It has attractions that will make your body be full of adrenaline.

San Ángel. Perfect area for lunch or dinner. A craft market is celebrated on Saturdays.



THE MINISTRY OF URBAN WORKS (MOU) INTENDS TO INVEST €726,000 M IN URBAN INFRASTRUCTURE DURING THE NEXT 20 YEARS. THE XII FIVE-YEAR PLAN ESTABLISHES THE OBJECTIVE OF AN INVESTMENT OF APPROXIMATELY €1,704M DESTINED TO METRO LINES.

India focuses its urban transport o

The Indian rail network, with a total length of 64.600Km, is the fourth longest network in the world after the US (250,000 km), China (100,000 km) and Russia (85,500 km). In addition, it is the rail network transporting more people and the third in terms of freight transport worldwide. Therefore, it is the second most populous country in the world after China with over 1,236 million and seventh in area with over 3.28 million km². There are currently 27 cities in India that offer either a subway system or a subway plan- These are: Cal-

cutta, Chennai, Delhi, Bangalore, Gurgaon, Jaipur, Chennai, Mumbai, Navi Mumbai, Kochi, Hyderabad, Ahmedabad & Gandhinagar, Bhopal, Chandigarh, Indore, Kanpur, Lucknow, Ludhiana, Nagpur, Nasik, Patna, Pune, Surat and Guwahati. This railway development, together with the investment of €1,704 M planned for the next 20 years makes India a country with future business. It is a country in full expansion, which has its own characteristics that make it attractive for a wide range of business sectors in addition to a projection of becoming the

world's third largest in terms of GDP growth economy for the year 2050. This development in infrastructure is an important source of business for the industry of Spain. "The Spanish railway industry has managed to become one of the best in Western Europe as a result of a policy of major investment carried out by the Government and the high technological level obtained by the Spanish private companies. Spain has the third longest High Speed network in the world and first in Europe, with a length of about 2,900 km. It has the most modern fleet of trains and



The images show the actual metropolitan rail system in some cities of India.



on metro networks

the most technologically advanced. This is why Spain is gaining brand recognition and prestige worldwide, including in this complex and different country, "explains Carlos Jimenez, Chief Commercial Counsellor for the Economic and Commercial Office of Spain in New Delhi. Proof of this is the fact that more and more Spanish companies get a foothold in the Indian market in subsectors as diverse as construction of the track, rolling stock, signaling systems, process automation, communication between stations, ticketing, passenger services, train furniture and

train stations, renewal of cars, air conditioners and refrigeration, testing and trials, etc.

Population increase

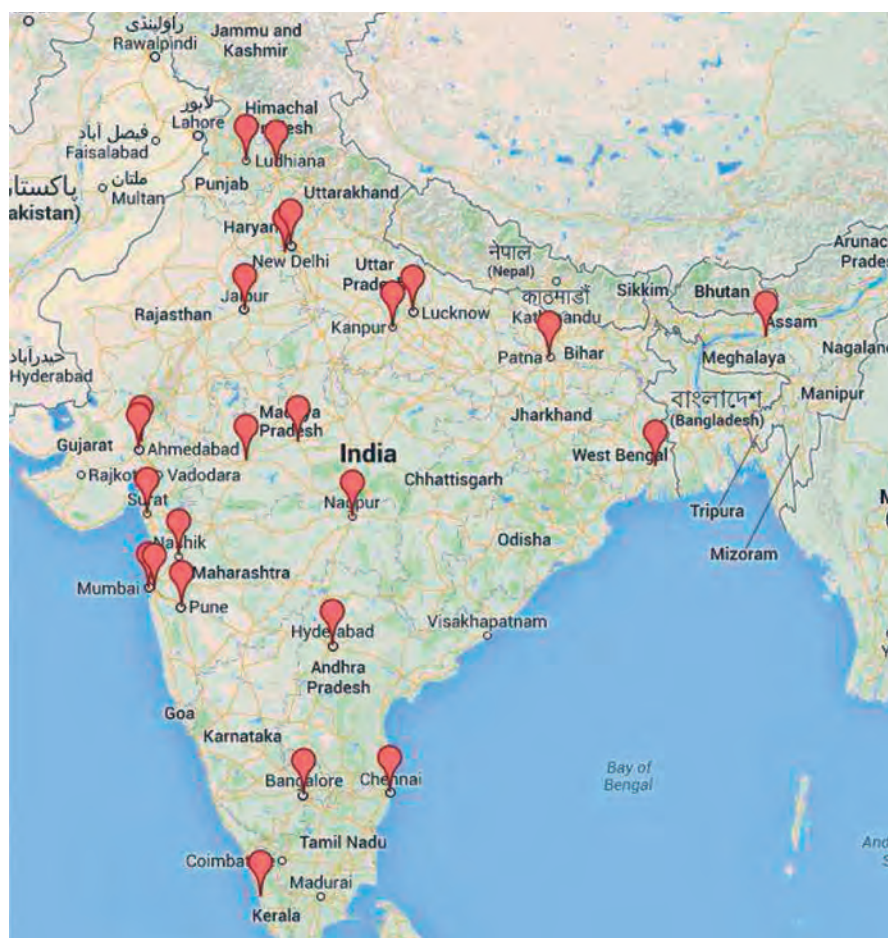
The Indian economy has suffered a reduction in growth rate of 6.2% in 2011-12 to 4.5% in the first three quarters of 2013-14 due to the slowdown underway in the global economy. "Also, it has been shown that the GDP growth of a country is related to the level of infrastructure development thereof, the infrastructure sector is one of the sectors that is receiving the largest institutional

support currently in India," explains Carlos Jimenez Aguirre. Recently there has been a large increase in population. According to the census of 2001 and 2011, India's total population amounts to 1,210,200,000 inhabitants (March 2011) and 377.1 million of them live in urban areas. In the last decade the net addition to the population in urban areas was 91 million. Urban population represents 31.6% of the total population, suffering an increase of 3.35% in the total population that was living in urban areas during 2001-11.

Continues ▶

Metro networks: a solution for the congestion on roads

The XII plan provides that private participation in infrastructure rises to 48% compared to 36.61% in the previous plan. In the rail sector, private investments so far have made only 4% of the total investment in the infrastructure sector.



The map shows the cities in which a metropolitan rail transport has either been considered or is under project.

It is estimated that India will reach over 700 million people in urban areas by 2040. "Despite the above, India is suffering the creation of a middle class with greater purchasing power which has resulted in an increased number of vehicles in big cities", adds Jiménez Aguirre. "This has led to some problems such as very congested roads, a higher rate

of accidents and emissions of CO₂ that have put some cities in India among the most polluted in the world".

Because of these consequences, "the need for development of urban infrastructure and the implementation of a public transport is evident, positioning the subway as a solution. According to the char-

MODE CHOICE	PHPDT IN 2011 (PEAK HOUR PEAK DIRECTION TRAFFIC)	POPULATION CENSUS 2011 (IN MILLIONS)	AVERAGE LENGTH PER JOURNEY (KM)
Metro	$\geq 15,000$ for a length of at least 5 continuous km	≥ 2	$> 7-8$
LRT (Light Rail Transit)	$\leq 10,000$	> 1	$> 7-8$
Monorail	$\leq 10,000$	> 2	Approx. 5-6
BRTS (Bus Rapid Transit System)	$\geq 4,000$ until 20,000	> 1	> 5
Organized bus service in the city		> 1 lac, 50 000 in the case of mountain cities	> 2 a 3

Table 1. The Planning Commission makes the following transport choice for each city.

roads

acteristics of each city, the Planning Commission establishes guidelines for the choice of transport mode to implement,"explains Carlos. This is summarized in **Table 1**.

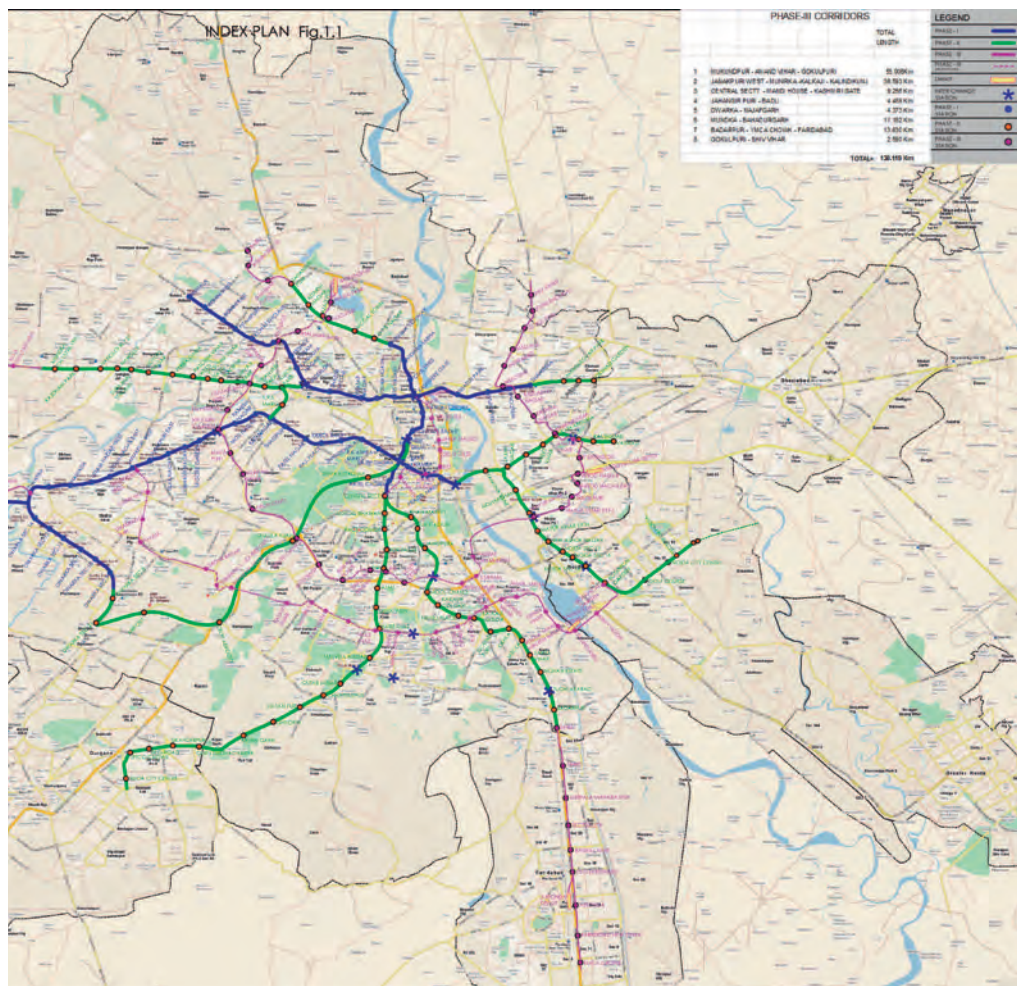
This strong commitment of investments for metropolitan rail can be interesting for foreign industry since other projects of great interest are arising:

- The construction of exclusive freight corridors linking the four metropolitan cities: Delhi, Mumbai, Chennai and Howrah.
- The construction of 10 logistics parks.
- The Government of India has identified seven sections for constructing High Speed lines.
- A Renewal Plan of railway stations that will adjust them to international standards. A total of 50 stations have been identified.
- The creation of multiple port connectivity projects.

PPP model

Given the strong demand expected in investment of the Indian Government that cannot be covered only by the resources and budgets the central and/or state government or local authorities, it has become necessary to broaden participation in urban development programs to the private sector and thus access to foreign financial resources. "Therefore, more than ever there is room for foreign industry, as it is firmly committed to increase the PPP (Public Private Partnership) model. Thus, the XII Plan provides that private participation in infrastructure rises to 48%, compared to a 36.61% in the previous plan," comments Carlos Jimenez. In the railway sector, private investments have reached so far only 4% of the total investment in the infrastructure industry, well below the percentage obtained in other sectors such as ports (80%), telecommunications (82%), energy (44 %), airport (64%) or roads (16%).

DELHI METRO



- **Number of lines:** 2
- **Number of stations:** 34
(10 underground and 24 elevated)
- **Number of daily passengers:**
887,959 passengers
- **Operational project:** 2016-2017
- **Length:** 23.986 elevated km and 9.990 underground km

It is the thirteenth largest metro system in the world in terms of length and the first modern public transportation system in India.

Delhi's Metro is a subway system that connects Delhi, Gurgaon, Noida and Ghaziabad. It has been developed in 4 phases. Phase I and Phase II have already been implemented and are operational. Phase III is approved by the Government and the first implementations have already begun. Phase IV is still pending:

Phase III

For this phase, 2 new lines and 10 extensions routes have been proposed. Also, the approval of the Cabinet for 2 new lines have been obtained, though only 7 extensions have been accepted, which would sum a total of 160.27 km. The first works are already being carried out and it is estimated that the completion of this phase will come in March 2016. It will have a total of 28 underground stations. After this phase is completed, Delhi's Metro expects 4 million passengers per day

Phase IV

It is estimated to reach completion in 2021, and the length building will exceed 100 km. However, several changes to the planning before construction begins can be expected.

MUMBAI METRO

It will be built in three phases over a period of 15 years and it is expected to be completed in 2021. The final plan will include seven metro lines.

It was developed as the first PPP project where construction, operation and maintenance have been placed under the mandate of the private sector. Mumbai's Metro is expected to be developed in 3 phases.

Phase I

Construction began in 2003. It consists of:

► Line 1. Versova-Ghatkopar. which began operations in June 2014 and in 2021 is estimated to transport 665,000 passengers per day.

► Line 2 Dahisar-Mankhurd. This line was approved in 2009 and will cross Mumbai from North to East. The length of the line will be 31.87 km and will have 27 stations, all elevated. There is a possibility that this line in the future will connect with the proposed 18 km line from Andheri to Dahisar. Currently construction is paralyzed by the Ministry of Environment due to the problems of landlessness in the space chosen for the route.

► Line 3. Colaba-SEEPZ. Due to the cessation of line 2, it can be built before. This railway line will be 33 km long and will have 27 underground stations. Besides the contributions of governments, this line is funded by JICA. It is estimated that in 2020 it will transport 1,300,000 users per day.

Phase II

There are plans to build 2 lines with a total length of 20 km.

► Line 4. Charkop-Dahisar. The MMRDA has specified that for line 4, with a length of 7.8 km, an amount of Rp. 1,700 crores will be required. Thanks to this metro network, the western suburbs will be connected.

► Line 5: Ghatkopar-Mulund. For this line, 12.4 km long, the corresponding DPR has not yet been specified, but the research of M/s CES (I) Pvt Ltd is in process.

Phase III

This phase is only in the planning stage. It includes the development of three metro lines with a length of 43.2 km.

► Line 6: Andheri-Dahisar is estimated to have a length of 18 km.

► Line 7: Hutatma Chowk-Ghatkopar will be 21.8 km long.

► Line 8: Sewri-Prabhadevi will be 3.4 km long. With this corridor South Mumbai will be connected in only 25 minutes.

Navi Mumbai

Navi Mumbai is a planned municipality in Mumbai, on the west coast of the Indian state of Maharashtra. It was developed in 1972 as a new urban area of Mumbai.

The Government of Maharashtra (GOM) has entrusted the Industrial and Citizen Development Corporation of Maharashtra Ltd. (CIDCO) the planning and creation of an environmentally friendly transport, covering residential, commercial and industrial needs of the population and that secures rapid development. The Mass Rapid Transportation master plan has identified six corridors for suburban routes.

The viability plan was carried out by DMRC and after studying different modes of transport such as bus, monorail, etc, consultants opted to build a metro system. The passenger capacity that this system can carry at peak hours is 35,000 passengers PHPDT (Peak Hour Per Direction Traffic).

Given the different priorities, the total project is divided into 3 phases.

Phase I

The first phase is formed by the implementation of 3 metro lines.

► Line 1. Belapur-Pendhar, with an extension of 11,10km. It is hoped that this first line opens in 2016.

► Line 2: Khandeshwar-Taloje, 8.35 km long.

► Line 3. This is the interconnection between Line 1 and Line 2, 2km long.

Phase II

The following lines are distinguished:

► Mankhurd-Panvel via NMIA with an approximate length of 32 km.

► Sewree-Kharkopar-NMIA (MTHL) with an approximate length of 22 km.

Phase III

This phase is comprised by the following lines:

► Dighe-Turbhe-Belapur (20 km aprox)

► Vashi-Ghansoli-Mahape (9 km aprox)



- **Number of lines:** 1 +1 under construction + 5 proposed
- **Number of stations:** 12 (1st Line)
- **Executive Manager**
Bharat Bhushan Modgil
- **It was expected to be operational in 2012, but is still under construction**
- **Operators:** Mumbai Metro One Pvt Ltd (MMOPL) / Mumbai Metro Rail Corporation (MMRC)
- **Length:** 146 km

PHASE	LINE	TERMINALS	LENGTH
Phase I (2006-2019)	1	Versova-Ghatkopar	11.07 km
	2	Dahisar-Mankhurd	31.87 km
	3	Colaba-SEEPZ	33 km
Phase II (2011-2016)	4	Charkop-Dahisar	7.6 km
	5	Ghatkopar-Mulund	12.4 km
	6	Andheri-Dahisar	18 km
	7	Hutatma Chowk-Ghatkopar	21.8 km
	8	Sewri-Prabhadevi	3.4 km
Total (2021)	8		146.5 km



“Veó que las distancias se acortan”

La manera de ver el futuro puede ser trazando nuevos caminos. Caminos como la innovación, la apertura al mercado internacional o la integración con el medio ambiente, que son los que acostumbramos a transitar en el área de ingeniería civil y arquitectura de SENER.

Infraestructuras ferroviarias, alta velocidad, metros y tranvías, aeropuertos, puertos, trabajos marítimos, hidráulica, medio ambiente, arquitectura y urbanismo. Desde estas áreas proyectamos las obras que contribuyen al bienestar de la sociedad.

“I see distances getting shorter”

The way to see the future can be through the opening of new routes. Routes such as innovation, developing international markets or integration with the environment are paths the SENER civil engineering and architecture unit is accustomed to travelling.

Conventional and high speed railways, metros and light rail trains, airports, ports, maritime works, hydraulics, environment, architecture and urban planning. Are just a few areas where we create milestone works in our journey towards the society's well being.



La manera de ver el futuro

GURGAON METRO



It is linked to the yellow line of the Delhi Metro although it is independent. Also, the second phase is currently being conducted, expected to reach completion in 2015.

This is the first case of an Indian metro funded entirely by private funds following the PPP model.

The project was initially conceived as a collaborative project between the most popular commercial developer in India, DLF, and the company called Infrastructure Leasing & Financial Services (IL & FS). In the end, DLF had funding problems so IL & FS became its sole owner.

Metro Rapid is a fully elevated rapid transit system being developed for travelers and citizens of Gurgaon, Haryana. This system will provide a transportation solution for areas in and around the city of Cyber.

Gurgaon has expanded considerably in the last five years its population, as well as the the number of vehicles, which has increased 5 times. Consequently, traffic congestion and

pollution has exploded and become a way of life. With this in mind, the Haryana's Urban Development Authority (Huda) decided to develop a metro system.

Gurgaon metro was constructed in two phases.

Phase I

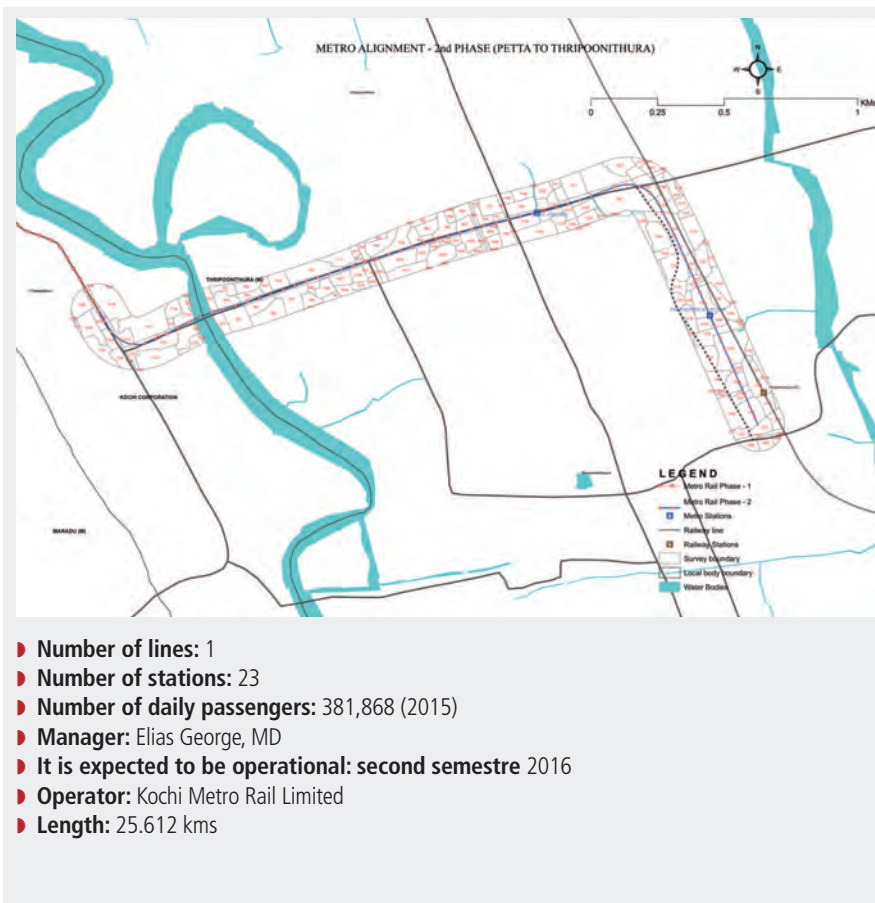
The first phase, with a length of 5.1 km, ended in 2013 and therefore is currently operational. It is the part of the metro which allows connection between the metro of Gurgaon and Delhi's metro station Sikandarpur, plus other 5 stations in the metropolitan area of Gurgaon.

Phase II

Future projections for the second phase (expected to terminate in 2015) of the Gurgaon Metro are:

- ▶ Creating a network of 7 km long to connect Golf Course Road with the station of Sikandarpur, located in the yellow line of Delhi's Metro.
- ▶ A North extension, to Udyog Viha, that will extend the full length of the route up to about 20 km.
- ▶ An South extension is expected to be operational by 2015.

KOCHI METRO



Kochi is the first city with less than 2 million people that is constructing a metro network

The Indian central government and state of Kerala formed the joint venture Kochi Metro Rail Limited (KMRL) to build and give maintenance services to a metro network covering 25.6 km. This line will contain 23 stations and it is expected to carry 381,868 passengers per day in 2015 and 550,000 passengers per day in 2033. The first phase began on June 7th, 2013 and is expected to be completed by June 7th, 2016.

For the operational phase of the Metro, the organism Kochi Metro Rail Ltd. (KMRL) was created, an SPV formed on 30-11-2011 through the Joint Venture between the State and the Central Government.

Phase I will be developed through an EPC and, regarding future phases of the Project no plan has been specified. The total cost of the project is Rp. 5146 crore, for which the Government of Kerala (GOK) and the Government of India (GOI) have provided each the amount of Rp. 785.50 crore, 16% of total expenditure. Also, KMRL has received a loan from the JICA ascending to Rp. 2170 crores, 44% of the total expenditure. In February 2014, the Agence Francaise de Développement signed an agreement for a loan of 180 million euros with the Indian government

CALCUTTA METRO

This is the first underground railway in India, with a length of 23.135 km. It offers services to the city of Calcutta and the southern and northern districts of West Bengal.



- Number of lines: 1+1 (under construction) +4 (planned)
- Number of stations: 24
- Number of daily passengers: 543,000 passengers
- Operator Kolkata Metro Rail Corporation Ltd (KMRC)
- Length: 28.14 km

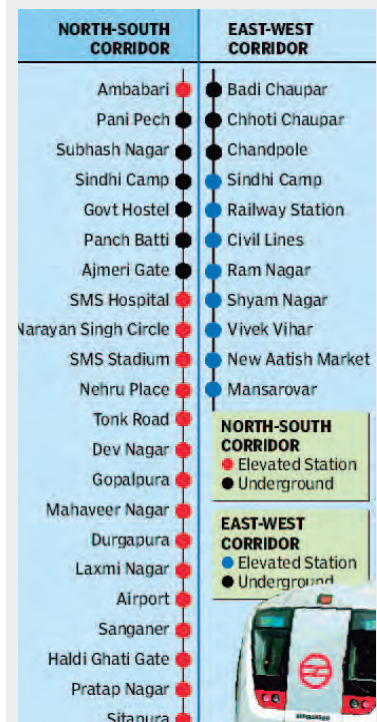
The current network of Calcutta's Metro consists of a line that is currently operational and a second line under construction, plus another 4 that are in various planning stages.

The North-South line was built progressively from 1972 to 2010. They have a length of 16,450 km (phase I) and 8,834 (phase II). The success of this line contributed to the construction of the East-West connexion, linking Howrah with Sealdah, two of the busiest railway stations worldwide. In addition, a section of the line will pass under Hooghly River, a milestone in Indian infrastructure since it is the first time that a work of these circumstances has been carried out. Construction of Line 2 East-West, which will have an approximate length of 14 km (5.77 of which will be high and 8.9 underground) and 12 stations (see table below) began in 2009 and its commissioning is planned for 2015. This new subway line will have 12 stations. Calcutta currently has other metro projects which in total sum up to 82 stations and 120.032 km:

- Line 3: 13 stations and a length of 16.72 km.
- Line 4: 9 stations and 18.50 km.
- Line 5: 11 stations and 10 km.
- Line 6: 13 stations and 32 km.

JAIPUR METRO

The network consists of two phases, the East-West Corridor and the North-South Corridor.



- Number of lines: 2
- Number of stations: 31
- Number of daily passengers: 210,000 (Phase I)
- Manager: Nihal Chand Goel, Chairman & MD
- Operator: Jaipur Metro Rail Corporation (JMRC)
- Length 32.5 km

The agency responsible for operating the metro is Jaipur Metro Rail Corporation (JMRC). Jaipur Metro is currently under construction and 2 phases are distinguished:

Phase I

East-West Corridor, Mansarovar - Badi Chaupar with a length of 12,067 km. It has been developed following the EPC model.

► Phase I-A (Mansarovar - Chandpole): JMRC agreed on 05-08-2010 with DMRC to build the section belonging to the Phase I-A encompassing a total of 9,718 km. Construction began in November 2010. Completion is expected by the year 2016-17.

► Phase I-B (Chandpole to Badi Chaupar) has a length of 2.3 km and JMRC has been chosen to develop it.

Phase II

North-South Corridor, Chandpole - Badi Chaupar with a length of 23.099 km. It will be developed following the PPP model.

► Phase II-B: It is proposed to be developed following the PPP model.

S.N.	DISTANCE BETWEEN STATIONS	KM	S.N.	DISTANCE BETWEEN STATIONS	KM
1	Howrah Maidan to Howrah	1,065	7	Salt Lake Stadium to Bengal Chemical	0.795
2	Howrah to Mahakaran	1,661	8	Bengal Chemical to City Center	1,169
3	Mahakaran to Central	0.969	9	City Center to Central Park	0.938
4	Central to Sealdah	1,445	10	Central Park to karunamoyee	0.770
5	Sealdah to Phool Bagan	2,316	11	Karunamoyee to Salt lake Sector v	1,235
6	Phool Bagan to Salt Lake Stadium	1,702			

LUCKNOW METRO

It will be the most expensive metro project in the state of Uttar Pradesh, with € 1,500M.



- Number of lines: 2
- Number of stations: 34 (10 underground and 24 elevated)
- Number of daily passengers: 887.959 passengers
- Operational project: 2016-2017
- Length: 23.986 elevated km and 9.990 underground km

The railway network of Lucknow Metro has arisen with two corridors:

► North-South Line: 22,878 km and 22 stations of which 3 are underground (in Table 1, passengers forecast).

► East-West Line: 11,098 km and 12 stations of which 7 are underground (in Table 2, passengers forecast).

Table 1

STATION	2015	2020	2025	2030	2041
CCS Airport	1170	1260	1340	1400	1520
Amausi	4700	5020	5370	5610	6070
Transport Nagar	2530	6690	9280	12330	18460
Krishnagar	10340	24050	29780	56570	74850
Singar Nagar	5780	10780	16240	19370	26990
Alambagh	13180	18840	21000	26250	35040
Alambagh Bus Stn	12340	20990	28410	37580	63020
Mawaiya	50990	61889	63180	72600	87180
Durgapuri	25980	35910	56450	59330	88130
Lucknow Rly. Stn	77650	143030	186620	241260	332350
Hussain Ganj	36760	44940	60180	78300	88620
Sachivalaya	11370	14800	17510	23410	26710
Hazrat Ganj	17380	21440	25170	31600	37070
KDSinghBabuStadium	4550	6720	10060	16450	14280
Vishwavidyalaya	5540	10580	14340	20810	18710
IT College Junction	10210	17500	24830	30870	27480
Mahanagar	50420	68100	88720	103210	118720
Badshah Nagar	13480	26270	36640	44000	61990
Lekhraj Market	21220	32100	41980	56330	71860
Ram Sagar Mishra Nagar	10410	16470	21360	27930	37240
Indira Nagar	15930	21310	29050	38030	53270
Munshipulia	27320	35970	45730	51050	54410

Table 2

STATION	2015	2020	2025	2030	2041
Lucknow Rly. Stn	39620	44980	48040	50430	65960
Gautam Buddha Marg	64000	11330	17280	22630	47820
Aminabad	22460	31100	38770	47340	62550
Pandey Ganj	24810	34280	44250	62760	71910
City Rly. Stn	8450	13190	18800	24900	34710
Medical Chauraha	9950	17120	26350	38570	50830
Nawajganj	16950	35000	63260	89770	104090
Thakurganj	8000	17680	36670	44670	63840
Balaganj	6150	19190	28510	51400	59430
Sarfarazganj	3970	6970	8430	9720	16140
Musabagh	7170	8180	9590	11420	13150
Vasant kunj	1720	4280	5980	7140	9270

CHENNAI METRO



- Number of lines: 2 (under construction) + 5 proposed
- Number of stations: 41
- Number of daily passengers: 666,000
- Operator: Chennai Metro Rail Limited
- Length: 117 km

Chennai Metro project, currently under construction, is expected to improve transit access in the city and will be connected to the Chennai MRTS (Mass Rapid Transit System).

Phase I of the project is being developed following the EPC model. Currently, this phase of the project which is under construction covers 45.1 km along 2 lines.

The line is divided into two corridors:

► Corridor 1:

Washermenpet – Broadway (Prakasam Road) – Chennai Central Station – Rippon Building –

along Cooum River – Government Estate – Tarpore Towers – Spencers – Gemini – Anna Salai – Saidapet – Guindy – Chennai Airport

► Corridor 2:

Chennai Central – along EVR Periyar Salai – Vepery – Kilpauk Medical College – Aminjikarai – Shenoy Nagar – Annanagar East – Anna Nagar 2nd avenue – Tirumangalam – Koyambedu – CMBT – along Inner Ring Road – Vadapalani – Ashok Nagar – SIDCO – Alandur – St. Thomas Mount.

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MAFEX MEMBERS WITH URBAN PROJECTS IN INDIA

► ARDANUY INGENIERÍA

Ardanuy Ingenieria has participated in the following projects: Electrification Project for line 7 of Delhi Metro Rail Corporation (DMRC). Extension of Line 2 of DMRC. Metro Bombay consultancy services. Bidding on detail projects for the Corridor Gharkopar-Mulund and the expansion of the corridor Ghatkopar -Hutatma. Bidding project for the Design and Construction of the branch Bhaupur-Khurja in the Eastern Freight Corridor (DFCC East Corridor). Currently, Ardanuy Ingenieria is performing the following: Project Management Consultancy (PMC) for the design and construction of the track, signaling and telecommunication, electrification, SCADA, and testing and commissioning for the electrified double track in the Eastern Freight Corridor (DFCC East Corridor). Project for the electrification of Line 1 of Kochi Metro Rail Corporation (KMRC). It is also currently bidding for the Light Rail Transit Project (Phase I) in the town of Thane.

► CAF

Delhi Metro Rail Corp awarded in 2008 the contract for the rolling stock of the Airport Metro Express Line to CAF. It consists of 8 units of electric trains formed by 6 cars. The trains began passenger service in August 2010, connecting Indira Gandhi International Airport to the central station in New Delhi.

► CAF SIGNALLING

The company participated in the Remote Control System for the Network Electrification of New Delhi's Metro.

► CETEST

Cetest has carried out trials for various Indian customers (BEML, Indian Railways and Chittaranjan Locomotive) in 2014. As part of the safety validation against derailment (according to EN 14363: 2005), rotational resistance tests for cash-bogie for the train manufacturer BEML were made (Jaipur Metro project) and also for Indian Railways

(sleepers), in BEML's facilities in Bangalore. In early 2015, this company is also expected to perform tests for electromagnetic compatibility (EMC) for Delhi Metro cars manufactured by BEML. On the other hand, Cetest has implemented electromagnetic interference measures (EMI) in a unit of Chittaranjan Locomotive in Chittaranjan (EN 50121-3-1: 2006 and EN 50238: 2010).

► INDRA

Indra has been awarded in recent years several contracts to implement its contactless ticketing technology in Calcutta's Metro, on the monorail and metro of Mumbai and on the new light rail service to Delhi's airport. In the case of Calcutta, Indra has collaborated on the development of the project with CRIS, becoming a technology partner of this company, created by the Ministry of Railway of India and responsible for the technological development of the country's railways, Indian Railways (IR).

► LKS

Project for the design of measures to control cross over the tracks in suburban railway lines in Mumbai: The scope of the project is the renovation of twelve stations in the suburban network of Mumbai for Mumbai Rail Vikas Corporation (MRVC) with the objective of reducing the high accident rate derived from unauthorized crossings on the tracks. Among the main actions to be undertaken include increasing transversal permeability of the line (new footbridges), improving passenger flow inside the station (signaling, reorganization of spaces, elevators and escalators, measures for disabled people or an extension of platforms); and the provision of coercive elements to prevent crossings in unauthorized places (fences between tracks and a closed perimeter).

► METALOCAUCHO

The company has developed suspension systems for new railway development

projects in major cities. In Delhi, Metalocauchó participated with CAF on the project for the line Airport-Expres and in the Delhi 's Metro with Bombardier; in Mumbai's Metro network with CSR and on commuter lines with Siemens; Metalocauchó has also worked with Alstom in Chennai's. The first phase has been developed in the headquarters, supplied from Spain or China, but for subsequent orders and turnover of units in operation, manufacturing and logistics the works will be performed in the plant located in Bangalore (MTCIndia)

► SENER

Chennai and Bangalore's Metro: Participation in tendering projects. Shivaji Nagar stations and Bijwasan: master plan of these railway stations, designed to be over tracks and under the "world class station" criteria.

► SIEMENS RAIL AUTOMATION

Project Manager for Metro Gurgaon. Siemens has supplied the entire rail technology, both rolling stock and electrification systems, as well as signaling. It has also been responsible for the integration of all systems.

► TALGO

Besides having a commercial office, Talgo has sold various maintenance teams, among which we must highlight: two turnstiles model 2112 for the Metro of Bangalore in 2012 and two of the same model for the Metro of Hyderabad, one delivered in 2014 and another will be supplied throughout the year.

► TYPESA

Review of the design and supervision of the construction for the duplication of the high capacity Electrified Railway destined to freight transport in the strait Bhaupur -Khurja (336 km electrified double track). This is the first action within the Eastern branch called DFC (Dedicated Freight Corridor of India).

A photograph showing a modern tram on the left and a high-speed train on the right, both at a station platform. The tram is white with a green logo and the word 'TRAMLINK' on its front. The high-speed train is silver with green accents and the word 'EUROLIGHT' on its side. People are walking on the platform between the two vehicles. The background features a red brick building and a clear blue sky.

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Vossloh Rail Vehicles designs and builds universal locomotives as well as rolling stock for urban public transport. The focus is on intelligently interlinking transport systems to provide future-proof solutions for urban, long-distance, public and freight transport. Our products and solutions make a key contribution to keeping people and freight mobile.

Facing "Horizon 2020" from the Spanish Railway

The Spanish railway sector is facing the challenge

THE NEW FRAMEWORK FOR RESEARCH AND INNOVATION OF THE EUROPEAN COMMISSION FOR THE PERIOD 2014-2020 IS AN OPPORTUNITY AND A GREAT CHALLENGE FOR THE EUROPEAN RAIL SECTOR



The novelty of H2020 within the railway sphere is the S2R initiative configured as a "joint undertaking" with a total budget of €920 M, of which a maximum of €450M comes from European funds.

The funding that the railway sector will receive has increased significantly over previous framework programs, introducing new rules and ambitious expectations regarding the impact on market orientation towards society challenges..

Spanish Railway Technology Platform (PTFE)

Since its inception in 2005, the PTFE has enhanced the innovative capacity of our companies. Under the General Department of Public-Private Collaboration of the Ministry of Economy and Finance, with the development of its technical secretariat by the Foundation of the Spanish Railways, it is conceived as a tool for the railway

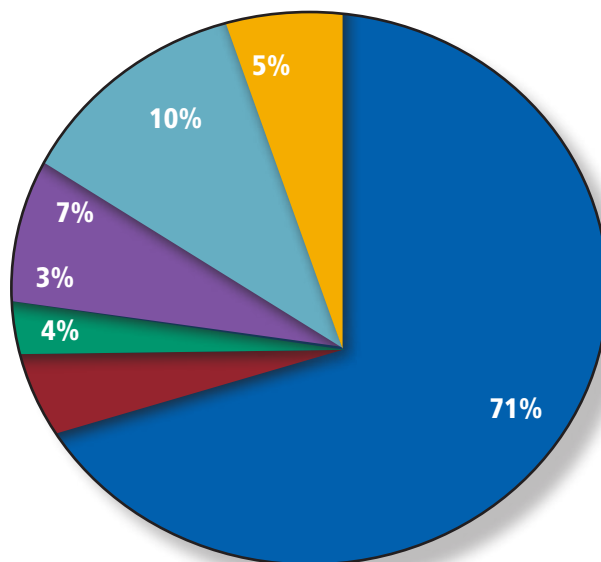
sector, led by industry that, with 403 members, defines the "long-term vision" and the "Strategic Research Agenda". Its main mission is to align the strategies of different actors, concentrate the efforts of R & D and reduce fragmentation in the Spanish railway research area.

A great challenge: Shift2Rail (S2R)

The novelty of H2020 within the railway sphere is the S2R initiative, designed as a "joint undertaking" with a total budget of €920 million, of which a maximum of 450 billion come from European funds and the rest is funded by the participating entities.

Since 2011, with support from the

Way Technology Platform: ges of society



PTFE MEMBERS

- Enterprises
- Rail operators and managers
- Public Administrations
- Universities
- Research and technological centres
- Associations and other



Ministry of Economy and Finance and in close collaboration with the Centre for Industrial Technological Development, the PTFE has closely followed the evolution of the S2R initiative with the aim of promoting the participation of Spanish entities consistent with the relevance of our sector. Five S2R forums have been held, updated documents have been distributed in PTFE meetings, specific working groups have been created and meetings with key national and European agents have been celebrated. Finally, a catalogue including R & D capabilities and an individualized attention to stakeholders has been implemented. The industry has recognized the strategic importance of this ini-

tiative and the opportunity cost of not being in it, mobilizing and positioning itself during the preparatory phase. Currently, it can be said that all this hard and intense work, is paying off. A Spanish company, CAF, is among the nine founding entities that comprise the first-level structure, and within the Group of States, configured as an advisory body, CAF, which is part of the Ministry of Urban Works, has been named President.

Next steps in H2020

S2R is a living reality that is taking shape. The recent closure of the call for associate members, second level in the structure, is another step in its configuration, where Spain shares great expectations.

Other forms of participation should slowly take shape, such as the annual open calls that begin in mid 2015, the creation of the Scientific Committee, the possibility of participation by outsourcing, working groups...

PTFE will continue its work of information and promotion of the participation of the Spanish railway sector, in all areas and for all types of entities, within the S2R initiative, other H2020 areas where it can be accommodated, and other programs promoting technological capabilities and service of its members. It will focus on innovation and will promote a highly competitive business that is located in the Avant-guard and is an international leader.

Universal implementation of the catenary

Network Rail, the owner and operator of most of the rail infrastructure in Great Britain, is improving the traction power capability of its lines by universally implementing a 25kV AC catenary system, either replacing the old third rail systems or electrifying the non-electrified sections.

This decision taken by Network Rail has important implications on existing infrastructure, especially infrastructure that is close to the line or restricts the clearance necessary to install the catenary, such as occurs with elevated structures crossing the tracks.

To minimize the impact on these structures, Network Rail awarded Idom with the contract to design a new system using insulating components and rigid catenary to resolve the problems with overhead structures.

The ultimate goal of the study is the development of an OCL solution that reduces the clearance needs to the possible minimum value required, as well as reducing the number of existing over-track structures to be reconstructed.

Both the Idom offices in London and Barcelona participated in the design works.



EcoActive Technologie: EMS, energy management

Energy Consumption is one of the largest expenses of railway operators today.

As part of the continuous drive to find innovative solutions to save energy and reduce costs, Bombardier has developed an energy management system (EMS) to measure and help to reduce on-board energy consumption.

Using an EMS allows train operators to actively manage one of their main cost drivers.

With nearly 400 systems offered to train operators globally and experience gained over 14 years, Bombardier has developed the EMS in response to market demand.

Bombardier Energy Management

System (EMS) has been developed to assist train operators in the drive to improve energy efficiency and performance of their rolling stock and reduce operational costs.

This product is suitable for installation in any railway vehicle, running under any type of voltages and built by any vehicle manufac-

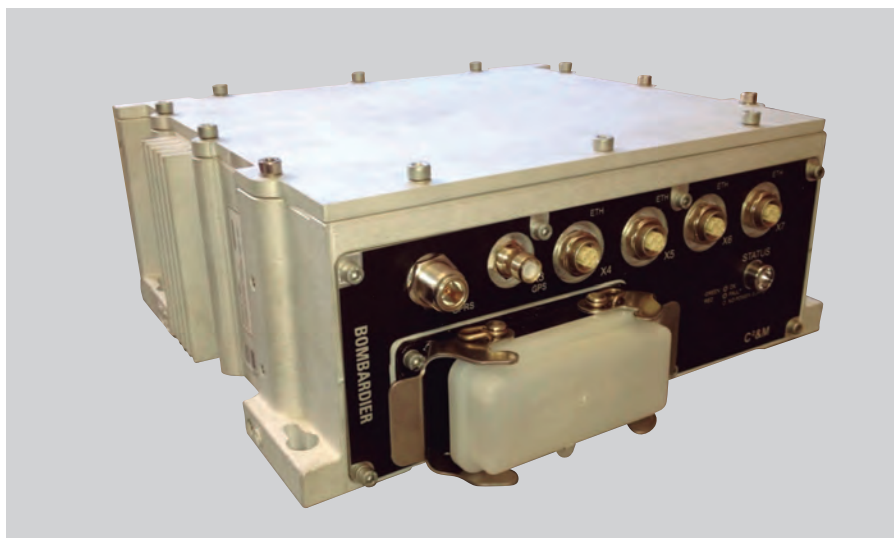
ary system



system

turer. Bombardier's wide product portfolio is designed to adapt to the specific requirements of each customer.

The EMS system measures train energy consumption, as well as regeneration, and provides reports, which allow train operators to improve the energy efficiency of their trains.



Fainsa presents the new Sophia seat



In the images, the low-cost seat Sophia appreciated.

A LOW-COST MODEL

Fainsa, passenger seats manufacturer having more than 75 years of experience, does offer a wide range of railway seating systems, which could meet any passenger transport need, from underground to high speed services.

FAINSA has recently developed the low-cost Sophia seat, now also on its reclining version, specially designed for Regional traffic purposes. The new Sophia seat, being already installed in different trains in service all around Europe, offers not only a modern, but also an ergonomic design, that together with the high quality materials used provide to all users a exceptional comfort level.

The new Indra RBC is certified for deployment

IT OFFERS MAXIMUM SECURITY CERTIFICATION SIL 4 AND IS ONE OF THE FEW SYSTEMS IN THE WORLD THAT FEATURES INTEROPERABILITY CERTIFICATION CB MODULE.

After some intense R+D+i work over the last five years, Indra now has one of the most advanced rail security platforms on the market. One key development, and an essential aspect for the European level-2 ERTMS signaling system, is InVITALRAIL RBC, a pioneering system that is ready for sale and full deployment to any rail infrastructure.

The Indra RBC system has been granted maximum SIL 4 certification

and is one of the world's few systems to have earned interoperability certification, CB module, granted by the notified body CETREN pursuant to directives 2008/57/CE, 2009/131/CE and 2011/18/UE.

InVITALRAIL RBC is an open and independent system that can easily be adapted to specific applications. Because it is already certified as a generic system there is no need for complex recertification procedures.



This development is essential for ERTMS Level 2.

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Our essence comprises experience, quality, technology, innovation, efficiency and cost effectiveness. This is the value proposition we were born with 45 years ago, sticking by it and thus becoming a global leader in transport engineering and consultancy with projects in more than 45 countries. We work both with private and public clients to whom we offer an integral perspective in each of our transport modes. The expertise of our 2,500 professionals allows us to be what we are: transport at the service of society.

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www.ineco.com



SIOS Inventory and Maintenance: The answer to a necessity

Work methods in rail maintenance have changed with the new technologies and computer systems. SIOS Inventory and Maintenance – SIOS I&M®, developed by Ineco, stems from the need for an integral and reliable system that encompasses all aspects of high speed lines maintenance, from the generation of a programming proposal to the conduction of inspections and checks. SIOS I&M has been conceived as an agile and effective tool; it's a web platform for the integral management of rail lines, in use since 2012 in the major part of the Spanish

High Speed Network. Its usability and management have made it a milestone in the way to treat information and documentation related to maintenance, both of infrastructure and of the rail superstructure.

An innovative product: From information to knowledge

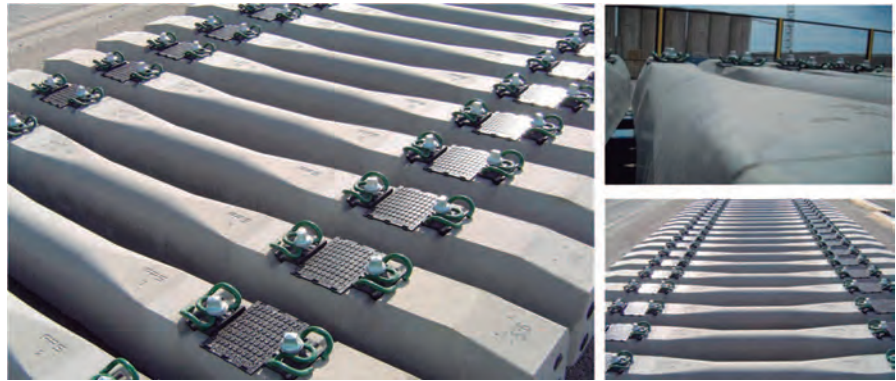
Thanks to its structure and accessibility, SIOS I&M® encourages the standardisation of the work of the different teams that contribute to the success of the maintenance of high speed lines. Indeed, the definition of a com-

mon methodology based on easy-to-integrate modules and its agile consultation, leads to the systematic normalization of the information caption and its analysis, optimising results and conclusions.

With the creation of an integrated solution for asset management, the work of technicians and managers of the railway administration in the maintenance and operation phase is facilitated when it comes to identifying the causes and issues that are causing conditions, incidents and corrective actions in the phase of preventive and corrective maintenance.

Sener: High Speed innovation

Sener has undertaken a significant number of innovative Infrastructures and Transport projects. These include important High Speed rail projects with the Administrator of Railway Infrastructures-Adif, such as the Madrid – Barcelona lines, whose trains are already running at 300 km/hour. These are state-of-the-art infrastructures that tackle new problems and where safety is of the highest priority. Sener began working with Adif on two studies: one to characterize the effect of flying ballast, and another on the very short-term prediction and behavior of crosswind on high speed lines. These studies led to two key developments: the crosswind prediction and detection system and the Aero-traviesa®, sleeper prototype to minimize flying ballast. Aero-traviesa® is



© ADIF

patented by Adif, CIDAUT foundation, Universidad Politécnica de Madrid (UPM) and Sener. Although it is a very recent development, several rail authorities have shown their interest in Aero-traviesa®, with Russia, Czech Republic and Turkey planning to build High Speed lines in the near future and are already interested in

using this system.

These new projects—using Spanish technology and spearheaded by public entities like Adif, companies such as Sener and institutions like the UPM and the CIDAUT Foundation—continue to break new technological ground in the global rail sector.

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This year in Lisbon the Iberian Rail Development conference will once again bring together key stakeholders from the Spanish and Portuguese rail markets to share investment and development plans and debate how to overcome current challenges.



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UPCOMING MAFEX ACTIVITIES



COMMERCIAL DELEGATIONS

► February

I Institutional Road Show
Brussels (Belgium)

► March 23-27

Peru and Ecuador
Lima and Quito

► September 28 - October 2

United States
Los Angeles, San Diego, San Francisco

► November 9-13

South Africa and Mozambique
Johannesburg and Maputo

► November 28-December 3

Saudi Arabia
Riad, Damman and Jeddah

V INTERNATIONAL RAILWAY CONVENTION

► June 15-17

Seville (Spain)

INVERSE MISSIONS

► November 16-20

Business opportunities in rail
freight transport and logistics
Valencia (Spain)

FAIRS

Presence with stand

► March 17-18

Middle East Rail
Dubai (UAE)

► April 22-24

Rail Solutions
Kuala Lumpur (Malaysia)

► June 8-10

UITP World Congress & Exhibition
Milan (Italy)

Assistance

► January 11-13

GCC Rail & Metro Conference
Muscat (Oman)

► February 9-10

Exporail Mexico
Cancun (Mexico)

► March 5-7

Eurasia Rail
Istanbul (Turkey)

► March 9-11

Metro Rail
London (United Kingdom)

► June 30 - July 1

Africa Rail
Johannesburg (South Africa)

► July 7-9

UIC High Speed World Congress
& Exhibition
Tokyo (Japan)

► October 4-7

Railway Interchange
Minneapolis (United States)



ArcelorMittal



Rail

transforming
tomorrow



ArcelorMittal is the world's leading steel and mining company, with rail production facilities in Spain, Poland and United States that offer a wide portfolio of products covering rails for subways, trams, trains, light rails, crane rails, crossings, rail accessories and other special products such as cathode bars and track shoes.

Steel is a vital part of the world we live in, and it has an important role to play in helping us forge a more sustainable future. The modern world relies on steel, as for example, for its rail infrastructure. Steel is an essential part of the fabric of life.

Customer satisfaction, market expansion and R&D focus, are ArcelorMittal Europe - Long Products, rail strategic basis. Following these axes, the new investments and developments were launched: Head Hardened rail at Gijón Mill and 120 length rail, at Dabrowa mill.

ArcelorMittal es el principal productor siderúrgico y minero a escala mundial, con instalaciones dedicadas a la producción de carril en España, Polonia y Estados Unidos; ofreciendo una amplia gama de productos, tanto carriles para el metro, tranvías, trenes, trenes ligeros, los carriles de la grúa, desvíos, accesorios de vía y otros productos especiales como cátodos y zapatas de oruga.

Estamos convencidos de que el acero desempeña un papel fundamental en el mundo: gran parte del tejido de la vida está hecho de acero, como en el caso de las vías del ferrocarril.

Satisfacción del cliente, expansión de mercado y apuesta por la I+D son la base estratégica de ArcelorMittal Europe- Long Products – Carril. De acuerdo con estos ejes principales se lanzaron las nuevas inversiones y desarrollos: carril de cabeza endurecida en la fábrica de Veriña y 120 m. en la fábrica de Dabrowa.

INFRASTRUCTURE

Construction

- ▮ Assignia Infraestructuras, S.A.
- ▮ Parrós Obras, S.L.
- ▮ PRECON - Prefabricaciones y Contratas, S.A.U.
- ▮ Rover Alcisa, S.A.

Electrification

- ▮ Alstom Transporte, S.A.
- ▮ Ardanuy Ingeniería, S.A.
- ▮ Arteche
- ▮ Idom
- ▮ Ineco
- ▮ Ingeteam Power Technology, S.A.
- ▮ La Farga Lacambra, S.A.U.
- ▮ Luznor
- ▮ Parrós Obras, S.L.
- ▮ Semi, S.A.
- ▮ Telice
- ▮ TYP SA

Maintenance

- ▮ Alstom Transporte, S.A.
- ▮ Amurrio Ferrocarriles y Equipos, S.A.
- ▮ Aquafrisch, S.L.
- ▮ Aries Ingeniería y Sistemas, S.A.
- ▮ Danobat
- ▮ Duro Felguera Rail, S.A.U.
- ▮ Ibertest, S.A.E.
- ▮ Idom
- ▮ Ikusi - Ángel Iglesias, S.A.
- ▮ Ineco
- ▮ Nxgen Rail Services España, S.L.
- ▮ Parrós Obras, S.L.
- ▮ Siemens Rail Automation, S.A.U.
- ▮ Telice
- ▮ Thales España GRP, S.A.U.

Track material and equipment

- ▮ Alstom Transporte, S.A.
- ▮ Amurrio Ferrocarriles y Equipos, S.A.
- ▮ Aquafrisch, S.L.
- ▮ Arcelormittal España, S.A.
- ▮ Aries Ingeniería y Sistemas, S.A.

- ▮ Arteche
- ▮ Duro Felguera Rail, S.A.U.
- ▮ Elektra - Grupo Elektra, S.A.
- ▮ Funor, S.A.
- ▮ Hicasa - Hierros y Carbones, S.A.
- ▮ Ikusi - Ángel Iglesias, S.A.
- ▮ Ineco
- ▮ Infoglobal, S.A.
- ▮ ITK Ingeniería, S.A.
- ▮ Jez Sistemas Ferroviarios, S.L.
- ▮ Parrós Obras, S.L.
- ▮ Redalsa, S.A.
- ▮ Siemens Rail Automation, S.A.U.
- ▮ Talleres Alegría, S.A.
- ▮ Thales España GRP, S.A.U.
- ▮ Valdepinto, S.L.

Engineering and consultancy

- ▮ Aquafrisch, S.L.
- ▮ Ardanuy Ingeniería, S.A.
- ▮ Aries Ingeniería y Sistemas, S.A.
- ▮ CAF Power & Automation
- ▮ Colway Ferroviaria, S.L.
- ▮ Getinsa Ingeniería, S.L.
- ▮ Ibertest, S.A.E.
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- ▮ ITK Ingeniería, S.A.
- ▮ LKS Ingeniería, S.Coop.
- ▮ MB Sistemas, S.Coop.
- ▮ NEM Solutions, S.L.
- ▮ Nxgen Rail Services España, S.L.
- ▮ Sener Ingeniería y Sistemas, S.A.
- ▮ Typsa

Security

- ▮ Actia Systems, S.A.U.
- ▮ Alstom Transporte, S.A.
- ▮ Ardanuy Ingeniería, S.A.
- ▮ DSAF. Dinámicas de Seguridad
- ▮ Idom
- ▮ Ikusi - Ángel Iglesias, S.A.
- ▮ Implaser 99, S.L.L.
- ▮ Ineco

- ▮ Infoglobal, S.A.
- ▮ Manusa Door Systems
- ▮ Siemens Rail Automation, S.A.U.
- ▮ Telice
- ▮ Thales España GRP, S.A.U.

Stations

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- ▮ Manusa Door Systems
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- ▮ Thales España GRP, S.A.U.
- ▮ TYP SA

ROLLING STOCK

On board equipment and components

- ▮ Actia Systems, S.A.U.
- ▮ Albatros, S.L.
- ▮ AL-KO
- ▮ Alstom Transporte, S.A.
- ▮ Alte Technologies, S.L.U.
- ▮ Ametsis, S.L.
- ▮ Aries Ingeniería y Sistemas, S.A.
- ▮ Arteche
- ▮ CAF Power & Automation
- ▮ Cetest
- ▮ Elektra - Grupo Elektra, S.A.
- ▮ FAINSA
- ▮ Fundiciones Garbi, S.A.
- ▮ Gamarra, S.A.
- ▮ Ikusi - Ángel Iglesias, S.A.
- ▮ Indra
- ▮ Infoglobal, S.A.
- ▮ Ingeteam Power Technology, S.A.
- ▮ Metalocauchos, S.L.
- ▮ MGN Transformaciones del Caucho, S.A.
- ▮ P4Q Electronics, S.L.
- ▮ SEIB - Servicios Electrónicos Industriales Berbel, S.L.
- ▮ Siemens Rail Automation, S.A.U.
- ▮ Teknorail Systems, S.A.

- Thales España GRP, S.A.U.
- Valdepinto, S.L.

Manufacturing machinery and tools

- Aquafrisch, S.L.
- Aries Ingeniería y Sistemas, S.A.
- Cetest
- Danobat
- ITK Ingeniería, S.A.
- MB Sistemas, S.Coop.

Rolling stock manufacturers

- Alstom Transporte, S.A.
- Bombardier España
- CAF - Construcciones y Auxiliar de Ferrocarriles, S.A.
- Cetest
- ITK Ingeniería, S.A.
- Patentes Talgo, S.L.
- Talleres Alegría, S.A.
- Vossloh España, S.A.

Interiors

- Alstom Transporte, S.A.
- Alte Technologies, S.L.U.
- Colway Ferroviaria, S.L.
- FAINSA
- Idom
- Industrias E. Díaz, S.A.
- Kelox, S.A.
- LKS Ingeniería, S.Coop.
- Teknorail Systems, S.A.
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Maintenance

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- Alstom Transporte, S.A.
- Ametsis, S.L.
- Aquafrisch, S.L.
- Aries Ingeniería y Sistemas, S.A.
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- Danobat
- Ibertest, S.A.E.
- Ikusi - Ángel Iglesias, S.A.
- Industrias E. Díaz, S.A.

- Ingeteam Power Technology, S.A.
- Kelox, S.A.
- Luznor
- Metalocauchó, S.L.
- NEM Solutions, S.L.
- Patentes Talgo, S.L.
- Siemens Rail Automation, S.A.U.
- Talleres Alegría, S.A.
- Teknorail Systems, S.A.
- Vossloh España, S.A.

Traction and control

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- Cetest
- Ingeteam Power Technology, S.A.
- P4Q Electronics, S.L.
- Patentes Talgo, S.L.

Security

- Actia Systems, S.A.U.
- Albatros, S.L.
- Alstom Transporte, S.A.
- Ardanuy Ingeniería, S.A.
- Cetest
- DSAF. Dinámicas de Seguridad
- Idom
- Ikusi - Ángel Iglesias, S.A.
- Implaser 99, S.L.L.
- Indra
- Infoglobal, S.A.
- Luznor
- Siemens Rail Automation, S.A.U.
- Thales España GRP, S.A.U.

SIGNALLING AND TRAFFIC CONTROL

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- Bombardier España
- Cables de Comunicaciones Zaragoza
- CAF Signalling
- DSAF. Dinámicas de Seguridad
- Getinsa Ingeniería, S.L.
- GMV Sistemas, S.A.U.
- Idom
- Ikusi - Ángel Iglesias, S.A.
- Implaser 99, S.L.L.
- Indra

- Ineco
- Luznor
- P4Q Electronics, S.L.
- Semi, S.A.
- Siemens Rail Automation, S.A.U.
- TECSA - Técnicas Electrónicas y Componentes, S.A.
- Telice
- Thales España GRP, S.A.U.
- Typsa

TELECOMMUNICATIONS

- Alstom Transporte, S.A.
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- Cables de Comunicaciones Zaragoza
- CAF Power & Automation
- Getinsa Ingeniería, S.L.
- Idom
- Ikusi - Ángel Iglesias, S.A.
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- P4Q Electronics, S.L.
- Siemens Rail Automation, S.A.U.
- Telice
- Thales España GRP, S.A.U.
- Typsa

TICKETING SYSTEMS

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- Ardanuy Ingeniería, S.A.
- Calmell Group
- Idom
- Ikusi - Ángel Iglesias, S.A.
- Indra
- Manusa Door Systems
- Thales España GRP, S.A.U.

ORGANISM/ ADMINISTRATION

- Cetren

OTHERS

- Cetren
- Elektra - Grupo Elektra, S.A.
- Ibertest, S.A.E.
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- NXGen Rail Services España, S.L.



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Actia is a company based in Spain with a number of subsidiaries in more than 15 countries, devoted to the research, design and manufacturing of electronic platforms, on board and fixes systems, using the latest technologies for the railway industries, not just in security, information and entertainment but also in the communication and transferring of data. It's available with a wide range of electronic equipment and services which meets all needs for different means of public transport like High Speed train, InterCity, Regional train, Suburban train, Train-Tram, Tram and Underground.

Actia partakes in each stage of the manufacturing process of its products: analysis of needs, design systems, equipment manufacturing, set up service, warranty period, substitution y renovation. Thanks to Actia innovatory efforts and staff, it has more than 100 applications in Spain, USA and the UK.



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Albatros Corporation is specialised in the design, manufacture, commercialization, and maintenance of equipment for the railway industry. Albatros is formed by various units of engineering and manufacture in Spain as other countries. We have a team of over 500 employees, selling over 100 million Euros a year, specially on export markets, with over 27,000 static converters, 35,000 passenger information systems, 6,000

HVAC systems, 10,000 WC modules and a variety of designs for the exterior as the interior of the trains, metros and tramways all over the world.



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AL-KO, a pioneer in the manufacture of shock absorbers in Spain, offers wide range of shock absorbers and suspension elements, backed by its engineering versatility that provides innovative technical solutions to meet the needs of its customers.

This fact has lead AL-KO, to carry out -in all its plants- major investments in research and testing facilities, as well as in expansions and refurbishments with the objective of implementing a flexible, efficient and profitable production, also in small series.

All this serves to make AL-KO a competent party in developing effective solutions in the field of suspension.



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alstom.com
- www.alstom.com

As a promoter of sustainable mobility, Alstom Transport is the only railway manufacturer present in the full spectrum of transport systems, equipment and services.

The company offers a complete range of high performance products: rolling stock, signalling, maintenance and modernisation, infrastructure and integrated solutions.

In Spain, Alstom Transport employs

around 2000 people in 19 working sites, has a manufacturing site in Barcelona and develops R&D programmes both for rolling stock and railway signalling and safety projects.

The technological laboratory located in Madrid has become a benchmark for signalling projects throughout the world.



ALTE TECHNOLOGIES, S.L.U.

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- www.alte-technologies.com

Alte Transportation, S.L. main activities are design, sales, manufacturing and maintenance of Toilet Modules with vacuum systems, Air Conditioning systems and Modular Interiors. All these products are designed with our own technology and they are specifically designed for the railway sector.

Alte main facilities are in Lliçà de Vall (Barcelona, Spain) and Raimat (Lleida, Spain). The company has more than 100 staff and extended network of agents worldwide with annual turnover of 18 million Euro. Our knowhow is built on 25 years doing several interior projects in addition to 6,000 HVAC units and more than 12,000 Toilet Module units in countries around the world.



AMETISIS, S.L.

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- www.ametsis.com

Ametsis is a leading company in the railway safety and brake systems market. We supply solutions to our clients' problems which other bigger companies cannot supply.

Our catalogue of products includes compressed air production and treatment, pneumatic brake controls, brake cylinders and tread brake units, spare parts, test benches. Altogether, our equipment allows us to provide integral solutions to any brake systems.

Ametsis investment on innovative development allows us to reduce costs. This is one of our important competitive advantages from which all parts profit.



AMURRIO FERROCARRIL Y EQUIPOS, S.A.

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- www.amufer.es

Amurrio Ferrocarril y Equipos, S.A. is one of the international market leaders in the design, production and installation of railway materials. Our rolling stock interchanges and crossings are installed in high-speed rail lines, underground lines, tram lines, and conventional railways throughout Europe, Asia, America and Africa.

In the area of metal foundry, we have the experience, the knowledge and the people to produce, process and mechanize machine tool parts and sets of great technical complexity in carbon steel manganese steel and other steel alloys.



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- www.aquafrisch.com

Aquafrisch is a service oriented company. Our task is to provide our customers needs with reliable results. Aquafrisch

provides a wide offer in equipment and services in both working fields for the company:

- 1.- Aquafrisch Rail: solutions for railway equipment in depots and workshops.
- 2.- Aquafrisch Agua: solutions for water treatment both in consumption and waste waters.



ARCELORMITTAL ESPAÑA, S.A.

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- www.arcelormittal.com/
rails+specialsections

ArcelorMittal is the world's leading steel and mining company and it is part of a small group of rail manufactures whose production has developed notably in the specialized high-speed, heavy-haul, metro, conventional lines and other applications are light rail and tram in the different qualities of normal carbon steel, micro alloyed and head hardened rails.

ArcelorMittal quality has been recognized by customers around the world, from Europe through Asia to Oceania, America and Africa.

Next time you travel by train, no matter the continent where you are, you may be doing it on rails manufactured by ArcelorMittal.



ARDANUY INGENIERÍA, S.A.

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28023 Madrid (MADRID)
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- F: +34 91 799 45 01
- madrid@ardanuy.com
- www.ardanuy.com

Ardanuy is a consultancy company that specializes in studies, designs, works management and technical consultancy pertaining to Rail, Metro, Tram and Cable Transport.

The company was founded in December 1992 and is made up of a team of over 100 Engineers and Architects. Other experts also act as consultants to Ardanuy staff on specific projects.

In Spain, Ardanuy carries out work from offices in Madrid, Barcelona, Valencia, Seville and Tenerife. It also has offices in Lithuania, Poland, India, Colombia, Algeria and USA.

Ardanuy has always had a marked international vocation. Currently over 90% of new contracts are won on the international market, in Western Europe: United Kingdom, Ireland and France; Central and Eastern Europe: Poland, Bulgaria, Latvia, Lithuania; America: Bolivia, Chile, Colombia, Mexico, Peru, USA; Africa: Morocco, Mozambique, Algeria, Egypt, South Africa; and Asia: India, Vietnam, Kazakhstan.



ARIES INGENIERÍA Y SISTEMAS, S.A.

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28046 Madrid (MADRID)
- P: +34 91 570 27 37
- F: +34 91 570 27 66
- mrey@aries.com.es
- www.ariestesting.com

Aries Ingeniería y Sistemas is a worldwide leading company specialized in turn-key test systems projects for the railway industry (rolling stock and infrastructure). Aries's services range from feasibility studies and concept design, to turn-key solutions, including maintenance.

Aries develops its own state-of-the-art technology, which it incorporates into its solutions.

The company, is featuring over 25 years of experience in the sector, also offers client-specific R+D consulting for both: railway rolling stock and infrastructure.

Aries relies on its modern technology and its highly qualified team to create successful and efficient solutions. Aries is present in more than 22 countries, employs a strategy directed at specific markets which allows a strong, stable, and profitable growth. The company has offices in Madrid, Miami and Shanghai.



ARTECHE (ELECTROTÉCNICA ARTECHE SMARTGRID, S.L.)

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- F: +34 94 615 56 28
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- www.arteches.com

Arteche Group's business is focused on providing equipment, applications and solutions for the electricity and railway sector worldwide. In power generation, transmission, distribution, industry, and railway technologies, the group has become a key player in the search for answers to new challenges. A position maintained by a deep knowledge of the different international electricity systems, efficient client-oriented organization and remarkable investment in research and development.

This is shown by over 50% increase in the brand references in the past five years. Arteche's decisions over the years made our group a symbol of reliability, quality and trust, both in solutions and in corporate relations. Corporate alliances have taken a key role in Arteches's history, becoming an asset which has contributed to our international growth and to the development of innovative solutions.



ASSIGNIA INFRAESTRUCTURAS, S.A.

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- F: +34 91 571 96 28
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- www.assignia.com

Assignia Infraestructuras is a company that is part of the Essentium Group, which is based in Spain. It has international experience in the development, execution, management and operations of large infrastructure

projects of all kinds, including concessions and services.

Assignia has participated in all high-speed railway projects in Spain. Its experience is reflected in the various projects developed including infrastructures, superstructures, stations, new lines or renovations of lines in circulation that include: high-speed, conventional and sub-urban lines, trams and metros, the expertise in the sector is complemented by performing maintenance works thereof.

The in-house machinery park (available for widths 1,435 and 1,668 mm), the flexibility and international presence of the company in countries like Mexico, Venezuela, Turkey, Morocco, India, Algeria and Chile, gives Assignia an unquestionable distinction in the railway sector.



BOMBARDIER ESPAÑA

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- www.bombardier.com

Bombardier Transportation, a global leader in rail technology, offers the broadest portfolio in the rail industry. Bombardier Transportation Spain is one of the leading exporters of the Spanish railway industry, employing more than 750 people in its plants and offices in Trápaga (Biscay), San Sebastian de los Reyes and Alcobendas (Madrid), Madrid and Barcelona, and taking part in some of the major railway projects in the country.

Its Propulsion Systems plant located in Trápaga (Biscay) and its Centre of Excellence in Rail Signalling Engineering located in San Sebastian de los Reyes (Madrid) are world top technological centres, leading the requests for Bombardier's propulsion and signalling systems for Spain and for the rest of the world. Exports represent already more than 85% of its activity.



CABLES DE COMUNICACIONES ZARAGOZA

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- www.cablescom.com

Founded in 1971, Cables de Comunicaciones has been steadily building its reputation as a respected business in the field of communications cables. Cables de Comunicaciones has cemented its position and its products are now used in over 50 countries around the world. The company has a wide range of products that are certified according to the standards of the leading telecomm and railway operators in the majority of countries in Europe. It is dedicated to designing and developing excellent telecommunications, signalling, instrumentation, data and fibre optic cables.



CAF - CONSTRUCCIONES Y AUXILIAR DE FERROCARRILES, S.A.

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- caf@caf.net
- www.caf.net

CAF is a firm focused on investigation, development, design, production and maintenance of Rolling stocks for the railway industry. Our product range include from High Speed, to regional and suburban trains, articulated units, underground trains, LRVs, light underground trains and locomotives. Maintenance of the whole range. It boasts production premises throughout Spain (Beasain, Irun, Zaragoza, Castejón and Linares), as well as in the USA (Elmira NY), France (Bagnères de Bigorre), Mexico (Mexico Df) and Brazil (Sao Paulo) and Rail Technological Centres in Beasain and

Zaragoza. CAF's projects are distributed in over 25 countries around the world in the five continents.



CAF POWER & AUTOMATION

► Parque Tecnológico de San Sebastián. Pso. de Mikeletegi, 58 - 2º. 20009 San Sebastián (GIPUZKOA)

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► F: +34 943 30 92 52

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CAF P&A is a global manufacturer of electric power solutions as well as information and communications systems for the rail industry. CAF P&A have equipped more than 5,000 vehicles world wide including, metros, light rail, locomotives and high-speed trains.

One of the main strategic lines is the development of its own technology. To do so, as a major asset, CAF P&A has a team of experienced, competent and dynamic specialists. CAF P&A develops, manufactures and deliver high reliability solutions adapted to each and every client's specific needs in compliance with railway standards.



CAF SIGNALLING

► C/ Sepúlveda, 7B
28108 Alcobendas (MADRID)

► P: +34 91 798 27 50

► F: +34 91 661 37 51

► cabsignalling@cabsignalling.com

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CAF Signalling, the technological subsidiary of the CAF Group, provides rail traffic signalling, both in Spain and abroad. As such, it offers railway signalling solutions and remote control for Railway infrastructures.

CAF Signalling, boasts the Company's own in-house engineering and expertise to take on "turn-key" railway signalling projects with recognition from several Railway Administrations in Spain and other countries in Europe, America, Africa, Middle East and Asia.



CALMELL GROUP

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(BARCELONA)

► P: +34 93 564 14 00

► F: +34 93 564 58 22

► calmell@calmell.net

► www.calmell.com

The first company of the group, Calmell, S.A. was founded in 1970, focusing its activity on the manufacture of graphic products. Currently, the Calmell Group is the leader in access control and identification, through its companies Calmell S.A., Affix S.L., Idoneum S.A., which are respectively engaged in producing the supports (tickets, cards, ...), developing specific software and hardware, personalization and security. In the public transport sector it works for integrators and operators supplying any kind of support for ticketing and reader/writer systems.

With a strong international presence through its network of representatives and distributors, the Calmell Group is able to satisfy your needs on a global level.



CETEST

► Lazkaibar, s/n
20200 Beasain (GIPUZKOA)

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► cetest@cetestgroup.com

► www.cetestgroup.com

Test and analysis services for:

- Design verification and validation.
 - Full homologation of new products and vehicles.
 - Failure analysis and optimization.
- Fully accredited test lab with more than 40 years of experience in railway testing. Test services cover the following areas:
- Structural components.
 - Running gear.
 - Suspension systems.
 - Vehicle dynamics.
 - Noise and vibrations.
 - Aerodynamics.
 - EMC and energy consumption.

■ Mechatronics.

■ Special instrumentation (Instrumented wheelsets, instrumented pantograph).



CETREN

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► T. Formación: +34 91 127 92 27/ 29

► Certificación: cetren@cetren.es

► Formación: formacion@cetren.es

► www.cetren.es

Cetren, as expert on the railway sector, has over 30 years experience in promoting and certifying the quality in this sector. Our experience and exclusive dedication to railways allows us to offer global solutions for certification, as the Spanish Notified Body according to European Interoperability Standards and also acting as Independent Safety Assessor and Certification Entity of rail products, processes and services.

Cetren is also the first private center expert in railway staff training, as approved by the Ministry of Public Works and Transport since 2007.



COLWAY FERROVIARIA, S.L.

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Colway Ferroviaria, S.L., company belonging to the COLWAY Group, specializes in the design, engineering, manufacture, supply, installation and commissioning of turnkey railway vehicle interiors. Through the integrated management of modular supplies, based on experience, knowledge, research and innovation, the company achieves the satisfaction of the needs and expectations of its customers: railway manufacturers and public administrations. Colway capabilities include Modular System solutions for Rail Interiors as Toilet Modules, Front hoods, saloons, walls, Buffet, Restaurant areas, vestibules.



DANOBAT

DANOBAT

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Danobat Railways business unit focuses its activity in the supply of turnkey solutions for the manufacturing and maintenance of railways rolling stock, incorporating own products of leading technology, together with those manufactured by specialized companies. It gathers extensive experience and qualification in the rendering of services such as engineering services, equipment integration, complex project management, and collaboration with the customer all along the life of the project. Danobat has a strong international presence and references in the most relevant customers.



DSAF – DINÁMICAS DE SEGURIDAD, S.L.

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- www.dsaf.es

DSAF is a company structure devoted to People's Movement Safety. It is committed to providing new technologies applied to design and project implementation, as well as initiatives that guarantee an approved evacuation safety level in this generalized risk society.

Emergency signalling is Dsaf's main application area; it develops photoluminescent, electroluminescent and LED signalling systems for people evacuation in risk situations and environments: tunnel evacuation safety, vessel evacuation safety, building evacuation safety...

Dsaf safety applications are developed in three

big areas: tunnel safety (road / railway), safety in vessels, and buildings.



DURO FELGUERA RAIL, S.A.U.

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- www.durofelguera.com

DF Rail is a Spanish company specialized at the design, manufacturing and supply of turnout systems and components for Metro, Conventional, Heavy Haul or High Speed Lines. Turnouts, single and double crossovers, diamond crossings, single and double slip crossings, single and double junctions, switch expansion joints, ..., on wooden or concrete sleepers; for ballasted or unballasted tracks; for single or combined gauges; with monobloc Mn steel crossings or with swing nose crossings; insulated glued joints; transition rails.



ELEKTRA-GRUPO ELEKTRA S.A.

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Grupo Elektra is a market leader in the field of electrical and electronic equipment distribution for manufacturers of rolling stock, maintenance and railway equipment manufacturers.

Being the leading company in the railway sector in the supply of electrical equipment. Your solution provider in electrical products for railway, with specific technical support. Elektra Group is composed of an extensive Spanish national network and has companies in Romania, India and USA.



FAINSA - FABRICACIÓN ASIENTOS VEHÍCULOS INDUSTRIALES, S.A.

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Fabricación de Asientos para Vehículos Industriales, S.A., FAINSA with headquarters in Martorelles, (Barcelona), was founded in 1935 by Mr. A. Singla Vila, being a business owned and managed 100% by the family since the beginning to the present day.

Since the first moment, its activity has been focused on the manufacture of passenger seating systems, and at present FAINSA offers a wide range of seats for coach, bus, ferry and railway applications. Through licence and know-how agreements signed worldwide, Fainsa seats are being produced in México, USA, Portugal, China, India and Australia-New Zealand...

Now FAINSA Group has 79 years of experience in the safe and comfortable market of transport of passengers around the world.



FUNDICIONES GARBI, S.A.

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- www.fundicionesgarbi.es

Founded back in 1972, Fundiciones Garbi has evolved from a traditional foundry to a Global Service Company for industry.

We offer a full catalogue of services starting from the casting or other materials till delivery of "ready to use" parts or assembly sets. With this aim, we have developed an organization oriented towards solid and competitive processes, ensuring quality from design phase using APQP tools.

Well aware of customer satisfaction,

we offer to our clients additional global services including a full range of heat treatments, machining, product inspection and testing (NDT's, etc), protection and finishing surface treatment (Painting, Metallization, Others...), including final assembly of different parts. For the Railway industry we are specialized on production of rolling stock material.



FUNOR, S.A.

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► F: +34 947 29 82 93

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Castings in carbon steel, alloy steel and stainless steel.

Our products:

- Steel casting.
- Raw castings or fully machined.

Examples:

- Bogie components.
- Pivots.
- Motor housings.
- Pressure rings.
- Axle boxes.
- Links...



GAMARRA, S.A.

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► F: +34 945 27 49 48

► gamarra@gamarras.es

► www.gamarras.es

Gamarras, S.A. at a glance: Spanish steel foundry -located at Vitoria Gasteiz- annual production: 4,000 tons - customers: European State Railways, - producers of rolling stock and their sub-suppliers - as foundry and supplier homologated by DB AG (HPQ), ÖBB, SBB, SNCF (AFQ) (extract) as well as according to DIN EN ISO 9001: 2000 + DIN 6700 - 2.

Products: brake discs, brake block shoe holders, buffers, spigots and essential steel castings for bogies.



GETINSA INGENIERÍA, S.L.

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Established in 1984, Getinsa Ingeniería, S.L. has grown into a top engineering firm in Spain and an international benchmark in the transport and environmental sectors. In Spain, Getinsa has played a leading role both in the modernization of the conventional railway and in the development of the new High Speed railway network. Our services include project management and engineering & consultancy services, involving all phases of the project, from feasibility studies up to commissioning and technical assistance for the operation and maintenance of railway infrastructure. Our experience covers civil works, track and platform, signaling and telecommunication systems, as well as electrification (electric substations, overhead lines, etc.). We are currently working on railway projects in Europe, Middle East, Africa, Asia, South America and USA.



GMV SISTEMAS, S.A.U.

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Since 1994 GMV provides Intelligent Transport Systems, offering turnkey solutions and specific products. GMV develops applications adapted to sector needs, including satellite navigation, mobile communications, passenger information, fare collection systems and monitoring-and-control centers.

GMV's railway portfolio includes fleet management system, SAE-R®, providing operators with an all-in system for planning and management, and other products like CCTV, PA-

Intercomm and Passengers Video Information, as well as electronic fare collection systems for railway sector.



HICASA - HIERROS Y CARBONES, S.A.

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► www.hicasa.com

HICASA specialises in the storage, transformation, distribution and commercialisation of railway materials, rails and railway accessories of all types in accordance with both European (UNE EN), as well as American (ASTM) Standards, not to mention others such as AREMA, etc. HICASA belongs to a private group of companies, GEVIR, which is made up of four enterprises in Spain, and is special in the sense that it combines its role of distributor with that of manufacturer, given that it possesses its own specialist light rail factory, a fact which endows it with a unique market profile. We can boast of a roofed surface area at our installations of over 13,000 m² where we dispose of modern cutting and drilling machines that enable us to transform iron and steel and to supply orders of any format and measurement, in accordance with the specifications requested by our clients. We export over 50% of our products abroad.



IBERTEST, S.A.E.

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► F: +34 91 884 50 02

► www.ibertest.es

Ibertest is a company that since 1970, designs and manufactures machines and complete laboratory installations "Turn Key" for high precision materials testing. Our equipment offers a global solution for R&D Investigation and Quality Control of all types of materials, englobing static and dynamic testing of the different elements in conventional and high speed railway, that includes: Tracks, Sleep-

ers, Track Support Assembly, bogies & etc. Our solutions guarantee the high demanding safety requirements established by national and international standards.



IDOM

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- oscar.rico@idom.com
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Idom is one of the leading companies in the field of professional services in engineering, architecture and consultancy. In addition to offices throughout Spain and Portugal, the company is established in Brussels (Belgium), London (UK), Bucharest (Romania), Casablanca (Morocco), Sao Paulo (Brazil), Valencia (Venezuela) and Mexico City, Minneapolis and Richmond (EEUU), Wraclaw (Poland). Idom was founded in Bilbao (Spain) in 1957 with the aim of offering the incipient Spanish market professional and independent services in the field of engineering. The evolution of the market and new client requirements channelled Idom towards a path of continuous growth, which has brought Idom to be a group leader in the fields of engineering, architecture and consultancy. More than 2,800 people carry out their professional activities distributed in 32 offices in four continents, has attended more than 3,000 clients.



IKUSI - ÁNGEL IGLESIAS, S.A.

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Ikusi offers integral solutions for exploiting the diverse means of urban public transport

(Bus/BRT/Tramway/Light Rail/Metro/Sub-urban), as well as in intermodal transport hubs. One proposal, backed up with a track record reaching back more than 20 years in the sector, has the main goal of improving passenger experience, guaranteeing safety, increasing revenue from secondary sources independent from the main activity, and streamlining operational efficiency.



IMPLASER 99, S.L.L.

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- F: +34 902 18 20 22
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- www.implaser.com

Implaser is a Spanish company focused in developing innovative security signs for railway projects. Innovation and quality are our mainstays, as we were the first SME being certified in R+D+I in Spain. Implaser has all the range of products certified by AENOR with photoluminescent values of 150, 300, 580 and 720 mcd/m².

We are also specialized in the manufacturing of informative, security and accessibility stickers for coaches, to be used both indoor and outdoor.

Hard work and great concern for innovation has allowed us to develop new products, such as photoluminescent systems combined with electroluminescent and guiding systems by LEDs.



INDRA

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Indra is a world leader and pioneer in the supply of technological platforms for railway operations management, control and supervision, having specific solutions already tested on high speed and conventional lines and metropolitan operations. Indra is also a leader in ticketing systems for transport operators and has facilities

and projects all over the world.

Furthermore, Indra develops high-precision safety and signalling systems.

At this moment in time, Indra's solutions are completely unique because of their high level of integration and adaptation to the current and future necessities of the railway environment whatever may be the most state of the art technological and operative options. Indra has managed to open a competitive market for the first time based on technological and economical competitiveness.



INDUSTRIAS E. DÍAZ, S.A.

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- www.industrias-diaz.com

Industrias E.Díaz, S.A. founded in 1968, manufactures side and cab WINDOWS for railways, metro and tram.

It counts with highly qualified personnel as well as a technical staff able to make any kind of design. Its facilities of 11,000 m² of built, contains the most sophisticated technology and means of test and homologations.

It is certificated ISO 9001:2000. In order to respect the environment, it does not use hexavalent chrome in its modern installations of chemical treatments, decreasing toxic substances emissions.



INECO

- Paseo de la Habana, 138
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- nacional@ineco.com
- international@ineco.com
- www.ineco.com

Global leader in transport engineering and consultancy, it has contributed to the development of transport infrastructures for over 45 years in more than 45 countries. Its high level technical specialisation allows its activity to diversify into new markets and

reinforce its presence in those where it is already established. Its participation in the whole railway system in Spain has led the company to develop important international projects like the Makkah-Madinah high speed in Saudi Arabia, the Ankara-Istanbul line in Turkey and the HS2 project in the United Kingdom.



INFOGLOBAL, S.A.

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InfoGlobal, internationally oriented company, world leader in the deployment of IP networks and services in the metropolitan transport industry, specializes in high-value technology solutions geared to the world of telecommunications. The implementation of communication networks, fixed and mobile in a variety of technologies, broadband communication systems train-ground-train and the services offered over them; video surveillance, infotainment, public address, intercom... implemented in multiple customers attest this position. The international presence highlights the ability of InfoGlobal to offer turnkey solutions, covering the entire project cycle: engineering, design, manufacturing, integration, commissioning and maintenance. From facilities in Mexico, Brazil, Peru, Turkey, Colombia, United States and United Arab Emirates we execute projects all around the world.

Ingeteam

INGETEAM POWER TECHNOLOGY, S.A.

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- www.ingeteam.com

Ingeteam is an expert leader in the development of electrotechnical and power electronics systems providing involving energy exchanges at large.

Our capacities and the experience on the railways sector allow us to offer technological solutions that significantly contribute to reach our customers' strategic objectives, leading to maximize operational efficiency.

We strive towards on offering in-house/ state-of-the-art developments for.



ITK INGENIERÍA, S.A.

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- F: +34 985 35 70 50
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- www.itk-ingenieria.es

One line of business in which ITK has become involved has been the development, supply and assembly of installations and equipment for the rail sector.

ITK's work takes in all aspects of a project, starting with the precise definition of the needs of the client to offer an integrated solution that brings together construction, production, environmental and personnel aspects via analysis, calculation and engineering.

Installations, vehicles and equipment are delivered in an operational state with their corresponding operating and maintenance manuals and even training courses for outside staff, integral maintenance for the life of said installations and a complete after-sales and repair service.



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JEZ Sistemas Ferroviarios, S.L. is committed to designing, manufacturing, supplying and maintenance of all types of manganese steel switches and railway track systems, in addition to moulded cast steel parts for the general industry.

Our Technical Department (Department of R&D) ensures we have the capability of designing and producing points and crossings (turnouts, crossovers, scissor crossovers and diamond crossings) or parts for them, such as hard steel manganese crossings or spare tongues.

At JEZ Sistemas Ferroviarios, S.L. we fit our developments to meet clients needs.



KELOX, S.A.

- Isla de Jamaica, 8
28034 Madrid (MADRID)
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- F: +34 91 358 05 64
- marketing@kelox.es
- www.kelox.es

Kelox launched its railway activity in 1977, manufacturing catering equipment for dining cars on longdistance lines.

The experience and knowledge acquired over the years have become Kelox specialist in the design and full supply of galleys and catering equipment for high-speed, shuttle and regional trains.

Our style of design is characterised by harmony; it is beautiful, ergonomic and functional, always according to the customer specifications.



LA FARGA LACAMBRA, S.A.U.

- Ctra. C-17z - Km. 73,5
08508 Les Masies de Voltregà
(BARCELONA)
- P: +34 93 859 40 20
- F: +34 93 859 55 30
- josep.anfruns@lafarga.es
- www.lafarga.es

La Farga Lacambra is a model company in the railway sector, with more than 200 years' experience in the copper industry. A solid international presence and con-

tinuous innovation in the search for new alloys have enabled it to produce high-service materials.

La Farga Lacambra provides global solutions for copper materials and its alloys such as CuMg, CuSn or CuAg, integrating the whole productive process and ensuring the maximum technical qualities. These products satisfy the needs of the market for all kind of lines and speeds around the world.



LKS INGENIERÍA, S. COOP

- Goiru kalea, 7
20500 Arrasate
(GIPUZKOA)
- P: 902 03 04 88
- F: 943 79 38 78
- arrasate-mondragon@lksingenieria.com
- www.lks.es

Through more than 25 years of existence, LKS DIARADESIGN has experienced a progression toward its consolidation on areas such as transport design, engineering and transport infrastructure.

Rolling Stock Design: Design consultancy, Concept design, Exterior styling, Interior styling, Design engineering, Branding, colour & trim. Railway Infrastructure: Feasibility studies, Landscape architecture, Infrastructure design, Technical assistance, Program & Project Management, Environmental consulting.



LUZNOR

- Paduleta, 47
01015 Vitoria (ARABA)
- P: 945 200 961
- F: 945 200 971
- iarbeloa@luznor.com
- www.luznor.com

Luznor Company is specialized in the design, manufacture and commercialization of professional torches (for railway industry), emergency lighting (for industry and architecture) and other Electronic devices. Luznor offers you (in its factory in Vitoria) highly qualified technicians, a high standard

of quality, an effective system development, manufacture and testing, and above all, a philosophy of commitment to our customers allowing us to offer innovative products equipped with advanced technology and recognized prestige.



MANUSA DOOR SYSTEMS

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(BARCELONA)
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- P: +34 935 915 700
- F: +34 902 321 450
- F: +34 932 185 610
- manusa@manusa.com
- www.manusa.com

Manusa is the Spanish market leader in design, production, installation and maintenance of automatic door systems. Established in 1966, it has 12 delegations in Spain, branches in Portugal, Brazil, Singapore and India and international presence in more than 70 countries around the world. Manusa develops specific products for public transport, such as platform screen doors (PSD) and ticket gates for access control, as well as one-way corridors, onboard doors and tunnel partitioning doors, always with the Manusa technology support.



MB SISTEMAS, S. COOP.

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C/ Igeltzera, 8
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- F: + 34 94 403 06 27
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- www.mbsistemas.es

MB SISTEMAS is part of MONDRAGON CORPORATION.

We develop turnkey "World Class" engineering projects, implementing automation solutions into the Assembly and welding phases of manufacture process for car body structures of railroad passenger cars.

We give "ad hoc" solutions for the custom-

er's needs; having implanted successfully our facilities around the world.

As engineering we develop both, robotic installations and special machines for any assembly process.



METALOCAUCHO, S.L.

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MTC specialises in the design and manufacture of anti-vibration and suspension solutions for Rolling stock.

The Company was established in 1982 and currently has three manufacturing sites, located in Spain (HQ), China and India. In 2009 the company was awarded IRIS Certification.

MTC, being among the leading companies in its sector, supplies to the main Rolling stock Constructors worldwide, including Alstom, Bombardier, CAF, CSR, CNR, Hyundai Rotem, Siemens, Talgo, Vossloh).

We also collaborate with Operators for the supply of spare components for their overhaul projects.

Our main products are rubber-metal primary and secondary suspensions, focusing on primary springs (conical or chevron type), guiding bushes, guiding links, secondary air springs and emergency springs, traction rods, elastic bushings, buffers, layer springs as well as a diverse range of associated rubber-metal solutions.



MGN TRANSFORMACIONES DEL CAUCHO, S.A.

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- F: +34 91 884 45 84
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- www.mgncaucho.com

MGN was established in 1957 and since then it has been developing its activity both designing and manufacturing rubber-metal components, mainly for the railway industry.

MGN invests in research and innovation as a basis for the development of elements to be adapted in the new understanding of passenger and freight trains, taking the latest technological advances of the rubber world, vibration control and damping systems.



NUEVAS ESTRATEGIAS DE MANTENIMIENTO, S.L.

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- P: +34 943 30 93 28
- F: +34 943 30 93 26
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- www.nemsolutions.com

We focus on maintenance optimization, developing intelligent systems for the O&M of rolling stock assets. We offer fleet performance and subsystems health monitoring, early failure symptoms detection and automated generation of maintenance plans based on predefined business objectives such as availability and cost.



NXGEN RAIL SERVICES ESPAÑA S.L.

- Rosa de Limas 1, Bis
28230 Las Matas (MADRID)
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- robert.grant@nxgenerail.com
- www.nxgenrail.com

NxGen Rail Services, through its NxTrack product, provides integrated track inspection system. This product is in service in North America with two of the Class 1 Railroads and our Spanish company has been formed in order to offer it to other railways in Europe. By integrating different inspection systems together we are able to provide logistic and cost savings in inspection activities, as well as gathering a much more holistic view of the condition of the

infrastructure which in turn facilitates and optimizes maintenance operations and planning.

The company will focus on building the required vehicles and systems for the European market in Spain. These systems, which can be installed on existing or new rolling stock, are offered as a service, allowing railway infrastructure maintainers access to state of the art inspection technology, without having to make large capital investments or tie up their own resources in these activities.



P4Q ELECTRONICS, S.L.

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- ialberdi@p4q.com
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At P4Q we are involved in the complete development of electronic devices and lean production services. We are structured as an integral supplier of electronics solutions, focused in flexibility and quick development. We design under customer specs and approval. Being a partner of our customers giving global support attending local production demands. Is the basis of our strategy. We have facilities in Albuquerque (NM), USA as well as in Spain.



PARRÓS OBRAS, S.L.

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- P: +34 926 88 47 05
- F: +34 926 88 47 06
- rocio@parros.es
- www.parros.es

Family business with over 25 years experience in civil construction and iron and steel industry for the railway sector. Parros Group which is specialized in pile driving and catenary foundations, has implemented the 80% of the foundations of the entire Spanish High Speed Network.

Whether conventional railway network or Highspeed Railway (AVE), PARROS GROUP is distinguished by the versatility of our machines adapted "Ad hoc" for auxiliary civil works from the railway, with automatic switching to the three Spanish gauges. Also innovative is our implementing system of noise barriers from the railway track and its foundations. Generic activities of building and general construction.



PATENTES TALGO, S.L.

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28290 Madrid (MADRID)
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- marketing@talgo.com
- www.talgo.com

Talgo, leading High Speed rolling stock manufacturer in Spain, has over 70 years of experience manufacturing very high speed, high speed, intercity and regional trains, tilting passenger coaches and locomotives.

The company is also a pioneer in providing complete maintenance solutions to railway operators worldwide, and is specialized in the design and manufacture of maintenance equipment for any type of rail vehicles.



PRECON; PREFABRICACIONES Y CONTRATAS, S.A.U.

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- F: +34 91 359 12 46
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- ferroviario@precon.cemolins.es
- www.cemolins.es

PRECON is the Spanish leader in design and supply of precast concrete products for railway tracks, either ballasted and ballastless tracks. PRECON has supplied solutions based on monoblock, twinblock, block, slabs and sleepers for switches and crossings. Either for high speed, conventional lines, heavy haul, sub-

ways and tramways. PRECON from its two Spanish factories has supplied more than 15 millions twinblock sleepers, 5 millions monoblock sleepers, 500,000 ml sleepers for switches and crossings and currently manufacture most of the slab track systems in use in Spain.



REDALSA, S.A.

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► P: +34 983 27 13 16

► F: +34 983 27 37 68

► redalsa@redalsa.com

► www.redalsa.com

■ Rail electrical welding LBS are arranged to form 288 meters for high-speed train stretch and conventional rail network.

■ Engineering services and integral management for electrical welding factories and management of rail stockpiles.

■ Regeneration of used rails to make LBS.

■ Providing fastening complete systems. Manufacture of metallic elements for different fastening systems. Iron sheets J2.L1 or P50 for J2 and Elastic fastening clips SKL-1, SKL14, SKL12 and new variant to "Fast-Clip".

■ Rail ultrasonic inspection, using hand-held equipment and self-propelled mobile equipment until 90 Km/h.

■ Maintenance and repair work of train coaches in our factory. Our facilities are equipped with 3 Km of railway and 3 railway access to RFIG. We have all the necessary traction resources of 1668 track width.

■ Thermal aluminium welding kits distribution.



ROVER ALCISA, S.A.

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► www.roveralcisa.com

The Rover Alcisa Group came into being in 1962, and brought together its corporate activities in Construction, Property Development, Engineering, Mining Extraction and New Technology, giving rise to a diversified corporate group ready to take on new investments. The Rover Alcisa Group is present on all fronts and in all fields of civil works. Indeed, its position as leader is plain to see. It has a wealth of experience in all kinds of overland infrastructures: highways, dual carriageways and motorways. In addition to its strong position in this sector, it also has a notable and unique presence in railway infrastructure: high-speed, metro and tram. Its involvement in one-of-a-kind projects as part of the Spanish rail network turned this corporate group into one of only a handful throughout Spain specializing in large-scale projects whose implementation is technically complex.



SEIB- SERVICIOS ELECTRÓNICOS INDUSTRIALES BERBEL, S.L.

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► www.seib.es

We are designers of products and electronic processes that since 1994 industrialize the knowledge of our clients in their products.

Currently, SEIB boasts the most advanced range of products and services on the market in industrial electronics and an own Know-How present in all activities of the company, from the simplest solutions to more complex developments and projects.

In 2008, we started the development of own products and now launched the generation 2.0 in which we apply the design to reduce the consumption of raw materials and processes, using components and cutting-edge techniques to increase functionality and reduce the cost of products in rolling stock.

What do we have to change about these products to transform into that you need?



SEMI, S.A. (GRUPO ACS)

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► F: +34 91 521 85 97

► ferrocarril@semi.es

► www.semi.es

► www.grupoacs.com

A society in international expansion. With the adaptability of a small business, the infrastructure of a big company and the financial backing of a large group. SEMI is encompassed in the major companies of Industrial Services sector of the ACS group. Focused in the industrial field, SEMI build infrastructures for energy, transport, communication, environment and non-residential building.

Activity in the railway area: Electrification and Traction Substations for AC and DC, Auxiliary Electrical Equipment, Engineering and Consulting, Maintenance of Catenary and Substations, Infrastructure for Railway Signaling and Communications.



SENER INGENIERÍA Y SISTEMAS, S.A.

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► www.sener.es

Sener is one of the leading engineering and technology groups in Europe with over one billion euros of annual turnover, more than 5,000 professionals and a continuously growing international presence with offices in more than 15 countries. In the field of railway engineering, Sener count on an extensive experience in metros, light rail trains systems and tramways, conventional railway line, freight transport and High Speed Lines. Sener's activities range from preliminary, conceptual and feasibility studies, basic and detailed engineering to project management services, supervision of works, value engineering or ICE services.

SIEMENS

SIEMENS RAIL AUTOMATION S.A.U.

► Ronda de Europa, 5
28760 Tres Cantos (MADRID)

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► www.siemens.es/railautomation

Siemens Rail Automation is the resulting Company after the acquisition of the Invensys Rail Dimetronic group by Siemens. The new division offers integrated mobility solutions through the most advanced technologies for railway signalling and train control.

Our main purpose is the supply of "turn-key" projects, including all the phases of design, development, supply, manufacturing, installing, testing, commissioning and maintenance of railway signalling systems and automatic train control systems for either mass transit applications as main line and high speed lines. The solutions and systems of Siemens Rail Automation allow railways and metropolitan networks to improve the safety of their railway application; increase the capacity of the lines; reduce operating costs; optimize maintenance works; obtain a better usage of its rolling stock, having at the same time lower energy consumptions rates and to decrease energy consumption.



Talleres Alegría, s.a.

TALLERES ALEGRÍA, S.A.

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► talegria@talegria.com

► www.talegria.com

Talleres Alegría with more than 100 years at the service of railway's networks, offers to its customers a wide range of fixed track equipment with the best quality and service conditions.

Following its own technical design or its customer's, Talleres Alegría manufactures among other turnouts for High Speed Lines, conventional Lines, subway and Tramway lines, as well as End Forged Switch Points and Track Vehicles. Being aware of the relevance of comfort within the railway sector, Talleres Alegría has col-

laborated with leading companies developing and applying technical solutions for mitigating noise and vibrations during the crossing over the turnouts.

TECSA

Customized Electrical Harnesses

TECSA - TÉCNICAS ELECTRÓNICAS Y COMPONENTES, S.A.

► P.I. Pla d'en Coll - Carrer del Mig,
35 08110 Montcada i Reixac
(BARCELONA)

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► F: +34 93 575 21 52

► marketing@tec-sa.es

► www.tec-sa.es

Founded in 1985, TECSA is specialist in customized connections and harnesses assemblies.

Our goal is simplifying the manufacturing process offering assemblies ready to connect.

Our experience and excellent materials' know-how, have provided Tecsa an excellent position in the market as a high quality harnesses manufacturer. Furthermore, we distribute some other electric products:

■ Tapes and Adhesives from 3M (Preferential Distributor for Spain).

■ Epoxy and Poliurethan resins from Elantas Camattini (Exclusive distributor for Spain).

■ Heat Shrinkable tubing from Plastronic (Exclusive distributor for Spain and Portugal).

We have been offering quality and personalized service during more than 25 years fulfilling with market needs and requirements.

Moreover, all our harnesses and assemblies are tested 100%.

TeknoRail

TEKNORAIL SYSTEMS, S.A.

► Paseo de la Castellana, 91
28046 Madrid (MADRID)

► P: + 34 91 515 60 00

► F: + 34 91 564 72 86

► info@teknorail.com

► www.teknorail.com

Teknorail Systems, S.A. is a company belonging to the EUROFINSA Group, whose activity focuses on the development of railway interior projects, aimed both for the refurbishment of existing vehicles and also for new rolling stock, with a scope of supply that ranges from the

design and engineering to the industrialization and material supply, including the technical assistance to the car commissioning.

Teknorail's main goal is to provide its customers with high-quality solutions for railway interiors by means of innovation, global project management, modular supply and flexible solutions.

telice

TECNOLOGÍA SOBRE EL TERRENO

TELICE

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Telice is a Spanish company with 39 years of experience in several fields of technology installation, especially for the railway sector.

Our activities cover design, installation and maintenance for Railway Electrification Systems, Railways Safety and Signalling, Optical Fiber, Industrial Automation and Electrical Installations.

Our extensive experience has made Telice a preferred partner for carrying out work and providing services for important railroad administrations and major construction and technology companies in the railroad industry.

THALES

THALES ESPAÑA GRP, S.A.U.

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► jose.villalpando@thalesgroup.com

► www.thalesgroup.com

Thales is a World leader in Mission Critical Solutions for Land Transportation. Thales Spain, with more than 60 years of experience, has been pioneer and leader in the technological development of the Spanish railways, being one of the main suppliers of safety and telecommunication systems for the Spanish Railways Administrations and present in countries as Turkey, Mexico, Algeria, Malaysia, Egypt and Morocco.

Its activity goes from the development, man-

ufacturing installation, commissioning to the maintenance of equipments and systems for railway signalling, train control, Telecommunication, Supervision ticketing and critical infrastructures security.



TYPESA

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Typsa Group is one of the most important European consulting groups and leader in the fields of civil engineering, architecture and the environment. Since its creation, in 1966, Typsa Group's ever-increasing activities, having focused both on preliminary assessment and on design, as well as supervision and/or management of construction projects in Europe, the Americas, Africa and the Middle East. Typsa is one of the most experienced Spanish consulting firms in the field of railways and metro systems. We have been

involved in more than 4,700 km of High Speed lines (HSL), 2,600 km of conventional lines, 390 km of conventional metro and 450 km of tram and light-rail transits.



VALDEPINTO, S.L.

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- www.valdepinto.com

Valdepinto, S.L. was established in 1986 and focuses its activities in the Railway sector.

We have four main product lines:

- All types of machining (specialists in electrical insulation).
- Screen printing, Signs and Engraving low-relief.
- Metal transformation and welding.
- Design and fabrication of transformers and coils of high/low voltage.

Our philosophy is to always offer all our clients an unbeatable value for Money, combined with an excellent service.



VOSSLOH ESPAÑA, S.A.

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- info@ve.vossloh.com
- www.vossloh-rail-vehicles.com

The Vossloh España Engineering Center has a commitment to innovation.

State-of-the-art technology and optimum quality are the characteristics of the whole range of products developed and produced in the Valencia plant.

As one of Europe's leading rail industry manufacturers, we design and build locomotives as well as passenger trains.

Closely linked with the industrial heritage of railways and with the benefit of more than a century of experience, our goal is to design and manufacture advanced-technology, high-performance locomotives for present and future public transport networks, to create new passenger vehicle concepts and to provide comprehensive maintenance services.



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crossings and turnouts for any
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how our magic works.

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- Movable point
- Solid block machining
- Rail assembled
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- Special solutions

- Conventional railway
- High speed
- Tram
- Metro
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InVitalRail

Cutting-Edge Technology for Critical Signalling Systems

- Radio Block Center
- European Vital Computer
- Digital ASFA-On Board Unit & Way Balise
- Safety Detector Processor

Our technologists specializing in ERTMS and ATP systems have invested more than 200.000 hours on research and development over past five years.

indracompany.com

